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Montana Department of
ENVIRONMENTAL QUALITY

Big Sky Clearwater

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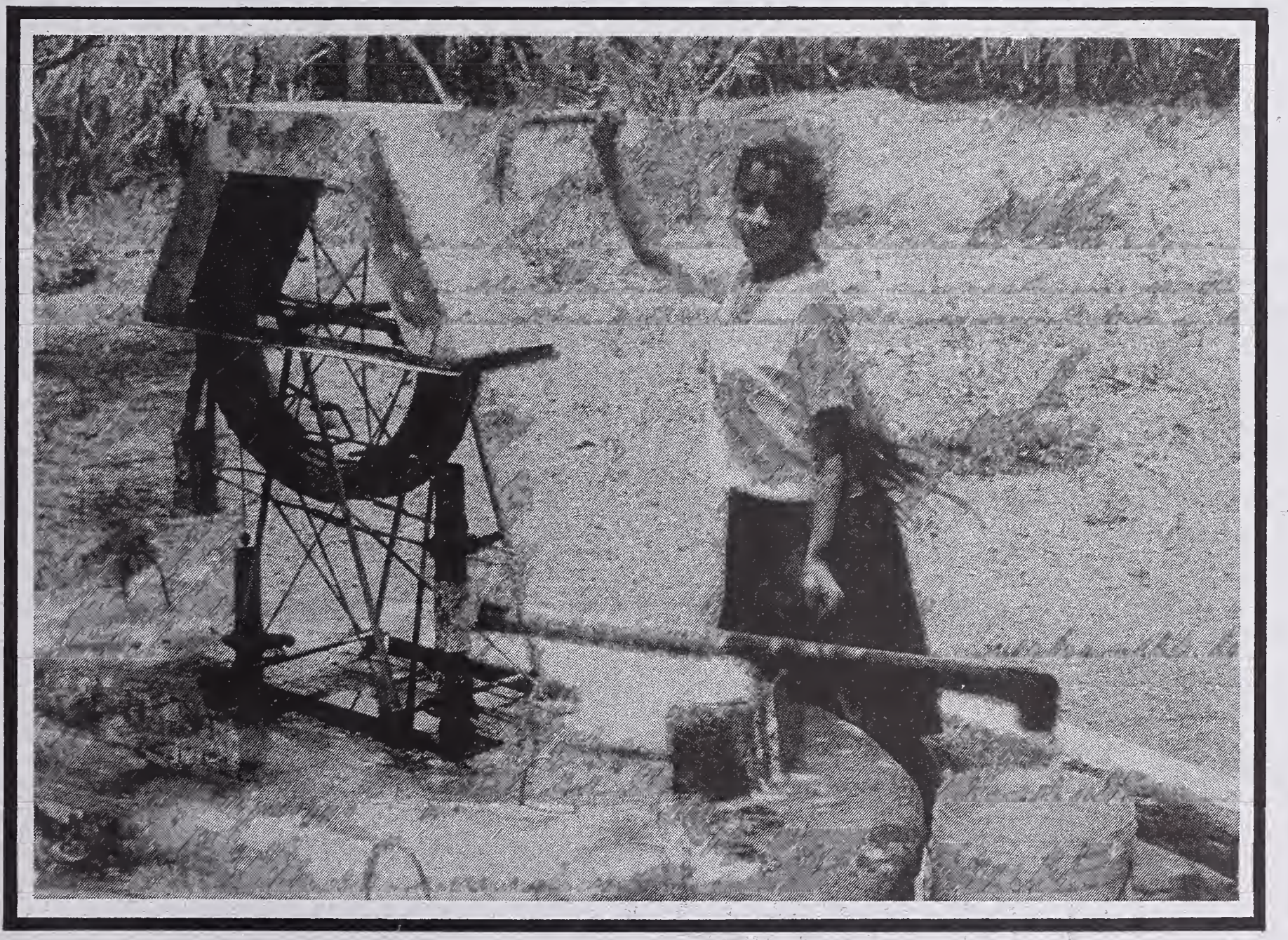
Volume XXIX, Issue 2 Fall 1999



Why We Do What We Do ...

Special "End of the Century " Edition

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Montana Department of
ENVIRONMENTAL QUALITY

Big Sky Clearwater

Volume XXIX, Issue 2 **Fall 1999**

The Big Sky Clearwater is a publication of the Department of Environmental Quality. The department welcomes articles of interest and suggestions for articles related to water quality, water and wastewater treatment and the water environment from the general public of Montana for inclusion in this publication. Please contact DEQ if you have information or ideas you would like to share with other professionals involved in the water and wastewater field.

Articles may consist of your thoughts or ideas about treatment plant experiences, technical papers or just about any information that you think may be of use to other operators or managers. The Clearwater Editor can be reached at:

(406) 444-5337 Bill Bahr or (406) 444-4769 Eric Minneti

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THE COVER: The photo is from the Water For People program to the Montana Water Environment Association (MWEA) for their financial contribution to the Hurricane Mitch Relief Efforts in the Honduras. Water For People is sponsored by the American Water Works Association (AWWA) and the Montana Section of AWWA (MSAWWA). MSAWWA is a long-time sponsor of the Water For People effort to provide and protect a safe drinking water source for Hondurans and others. As you look at this child, remember that all living beings need fresh, safe water to survive. What we do in Montana, and other operators, managers, engineers, etc. do in the rest of the world, to protect waters from pollution and pathogens and treat water so it is safe to drink, might just be the most critical job there is. As you look at this child, you know why we do what we do. Thanks.

P.S.: This is a special 'last of the century' issue of the Big Sky CLEARWATER. Enjoy!

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THE BIG SKY CLEARWATER IS FOR WATER AND WASTEWATER OPERATORS ACROSS MONTANA. IT IS PUBLISHED TWICE A YEAR BY THE PLANNING, PREVENTION AND ASSISTANCE AND PERMITTING AND COMPLIANCE DIVISIONS OF THE MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY IN COOPERATION WITH THE MONTANA WATER ENVIRONMENT ASSOCIATION AND THE MONTANA SECTION OF THE AMERICAN WATER WORKS ASSOCIATION.

Montana Department of
ENVIRONMENTAL QUALITY

Inside This Issue

Montana Department of Environmental Quality

Reflections in the Ripples

Bill Bahr
Water Pollution Control State Revolving Fund Program/DEQ

As always, it is my privilege to compile the summer/fall issue of the BIG SKY CLEARWATER. You will notice that we are using a new format for this issue. It is our goal to provide you with timely and useful information that will help you as you carry out the important work of bringing safe drinking water to the citizens of Montana and effective treatment of community wastewater. Please send in your comments and ideas so we can share them with other operators and managers.

EPA O&M Excellence Awards

In 1999, two Montana wastewater treatment facilities sent in applications for these awards to EPA Region VIII in Denver. The City of Forsyth WWTP placed first in the regional competition. Their application is now eligible for consideration at the national level. Congratulations to the Forsyth public works staff and the community as a whole for providing the support that treatment systems require. Dan Kennedy and Dave Wyrick deserve a pat on the back for their hard work. The Butte-Silver Bow Metro WWTP also ranked high at the regional level, but did not place first. Tom Piercy, Fred Wendt and staff have done a great job for the citizens of Butte, America. We hope they will apply for the 2000 award program. Congratulations to both communities for helping to protect the environment and public health in Montana.

President Martha Anne Dow

Most of you know Dr. Dow from her tireless efforts to develop the water and wastewater operator degree program at MSU-Northern, among many of her other interests. Martha has been both a friend and a mentor to many operators, managers and engineers in Montana. In May of 1998, Dr. Dow became President Dow for the Oregon Institute of Technology. Congratulations President Dr. Martha Anne Dow from your friends back home.

Bugs in Los Angeles WWTP System

I suppose no one really knows what problems will result from computer-chip clock response to the change to the year 2000 on January 1st. As you are aware, this is called the Y2K problem; or, more dramatically, the Y2K Bug. We have included guidance from the EPA in this and the previous CLEARWATER on checking Y2K compliance of your public utility. Since the Peter Principle is at work here, almost anything can, and probably will happen; somewhere. In the Los Angeles area, a Year 2000 readiness test of an emergency power generator for a water reclamation facility resulted in a spill of about 3 million gallons of wastewater from a line to the Hyperion WWTP. The generator worked, but an improper computer signal closed a valve allowing the sewage spill to occur. This problem was compounded by the failure of the computer to alert sanitation workers to the situation for about two hours. Must have been quite a mess. It is advisable, and required, that all parts of your system be checked for Y2K compliance.

Advanced Wastewater Training Seminars

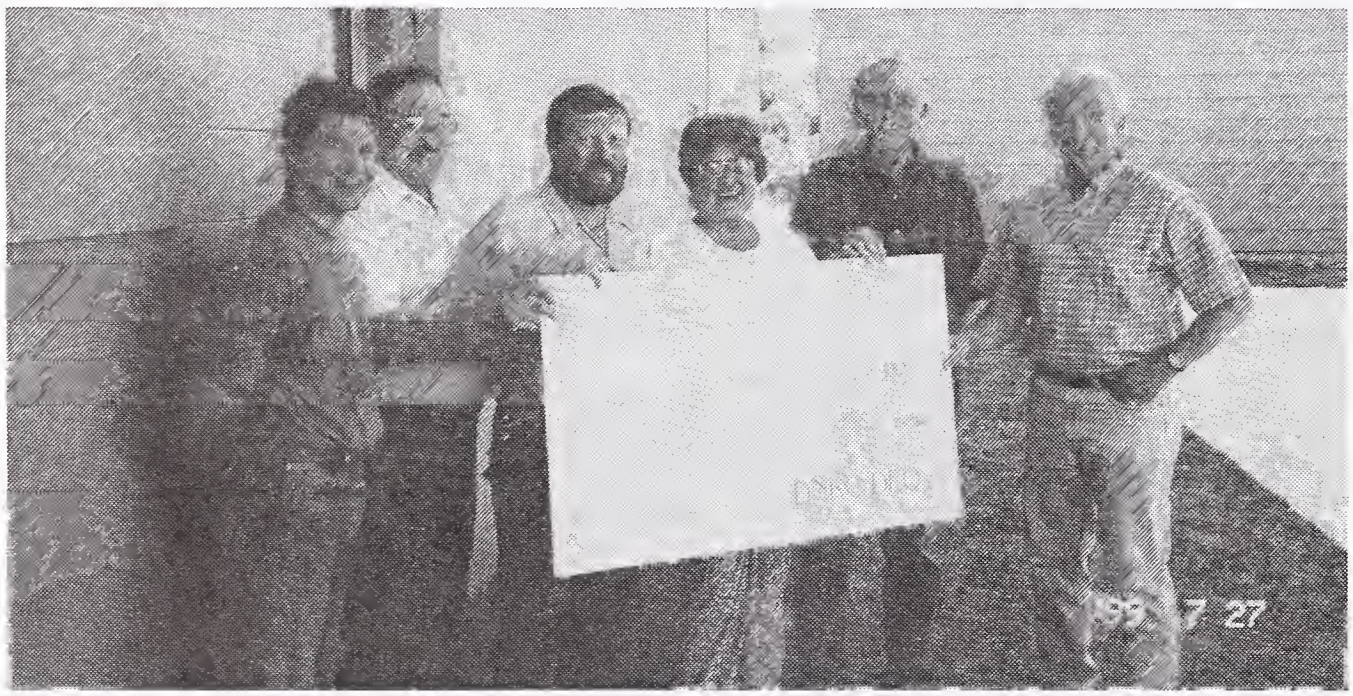
The 1999 DEQ wastewater operator continuing education program carried out through the Montana Environmental Training Center (METC), included advanced topics such as biological nutrient removal and system evaluation techniques. The Advanced Lagoon seminars in Miles City and Missoula, as well as the Summer School in Kalispell, utilized design evaluations based on actual system flows and system technology to help operators implement planning strategies for their WWTPs. The Advanced Wastewater Seminar at the University of Montana Biological Station at Yellow Bay on Flathead Lake focused on Biological Nutrient Removal (BNR) concepts and applications. The laboratory exercise at Yellow Bay attempted to evaluate the WWTP at the Biostation in terms of design and flows and the ability of the facility to operate in a BNR fashion. The Miles City program included an on-site activity at the Terry lagoons. (See picture below.)

WEF Burke Safety Award

The Lakeside County Water & Sewer District was awarded the Water Environment Federation (WEF) Burke Safety award at the annual conference of MWEA and MSAWWA in Billings in May. As MWEA Awards committee chair, I had the opportunity to re-present the award to the district at their board meeting in July in Lakeside. It is important to keep safety and safe practices at the forefront of our minds as we work in and visit water and wastewater facilities. The Lakeside board is to be commended for their support of the safety program. An aspect of this year's award is that the Lakeside district is a small system. Often small systems have limited resources to fund and carry out the myriad of safety policies and procedures necessary to provide a safe work environment. Workers in small systems need a safe work place, too, however. The Lakeside staff are vigilant in their safety efforts and earned this award over larger systems through diligence, concern and hard work. Congratulations again. Pictured below are: Bill Bahr, DEQ; Walt McElmurry, Lakeside operator; and, Butch Forsyth, Lakeside District manager.

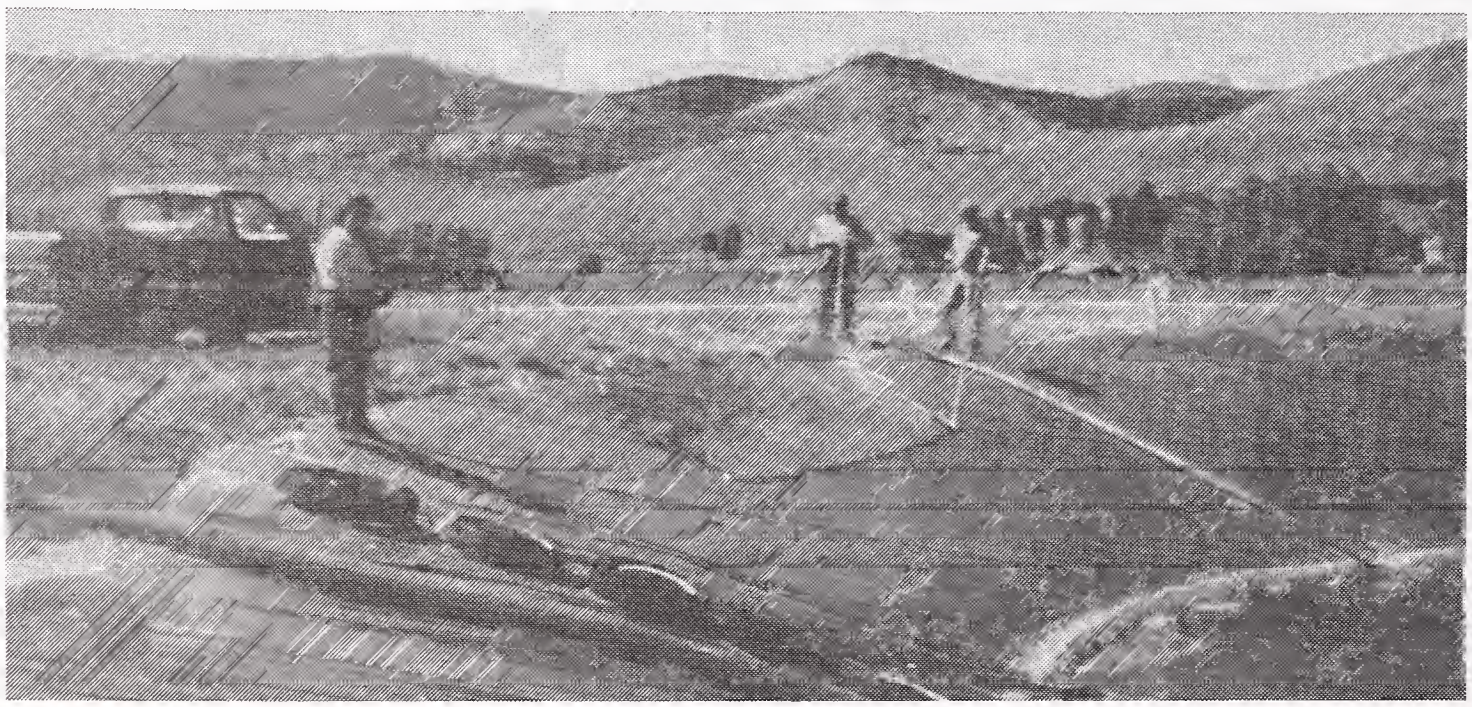
The Water Pollution Control State Revolving Fund Program

Wastewater treatment system projects that upgrade, build or improve WWT facilities throughout Montana require planning, interim and/or project financial support. The WPCSRF program provides planning grants and low-interest loans for public wastewater infrastructure projects. Nonpoint pollution source projects can also be financed with the WPCSRF funds. (Information pages included in this issue.) One recent WPCSRF project was to correct infiltration and inflow problems at Hot Springs. Pictured below at the contract signing are: Paul Montgomery, Neil Consultants; Hot Springs Mayor, Dave Oxford; Dan Oberlander, WW Superintendent; Diane Baldry, Town Clerk; Former mayor, Irwin Bangen; and, Tom Slovarp, DEQ WPCSRF program engineer.



Operator Innovation at Hot Springs

Hot Springs wastewater superintendent, Dan Oberlander struggled for many years to keep filamentous algae from clogging the lagoon cells and piping at his wastewater treatment system. He and his hired hands used long rakes to pull the entangled plant mass up onto the lagoon dikes. It was slow and the work was hard. Finally, Danny came up with a simple invention that saves time and cuts down on strenuous work. He attached weights and ropes to a section of plastic orange barrier fence. He has two people stand at the lagoon edge holding the ropes while he floats in a boat and drops the fencing section into the lagoon. The helpers pull the section up the lagoon bank and it captures the algae, which is pulled onto the bank for removal. Danny says the invention saves much time and work (and money). In the picture below, Linda Hills and Tom Slovarp, both of DEQ, are demonstrating the device with Dan Oberlander at the Hot Springs lagoons.



Last, But Not Least

On June 29, 1999, Mayor George Kurkowski presented a State of Montana service award to Curtis Myran, Miles City Director of Public Utilities, for his years of service to the DEQ Water and Wastewater Operator Certification Advisory Council. This is a position appointed by the governor of Montana and fulfills a vital role in carrying out the operator certification program goals. Thanks for all your support and service on behalf of operators throughout the state, Curt.

The Next Century

These will be the final words I have the opportunity to address you with in the Big Sky CLEARWATER this century. I can't tell you how rewarding it has been for me to meet the operators around Montana and to work with the water and wastewater professionals of MWEA and MSAWWA and the DEQ and EPA staffs. In Montana, in wastewater treatment, the trends are toward advanced treatment systems that use biology to reduce nutrients in the effluents and increasing use of electronics to measure, control and maintain treatment facilities. Operators in the next century will have to be better trained and more highly skilled than ever before. Montana's population base will continue to grow and most of that growth will be in areas that are served by centralized treatment systems. The impacts next century on our precious water resources will require new and improved treatment technologies. Some of these we may not even be aware of yet. As Montana's first line of defense against public illnesses, like the recent E. coli outbreaks in New York, water treatment system operators will be called on to provide better and better treatment of source water that will be increasingly impacted by greater demands. As Montana's last line of defense against pollution of state waters and protection of public health, wastewater treatment system operators will be faced with more stringent limitations and more complex treatment facilities. The role you play will be critical to the health of Montana's water resources. Water is the key to a healthy life. Water is the key to the quality of life we enjoy in our beloved state. I am truly excited to face this new frontier. I look forward to working with all of you on our journey into the next century. Bill Bahr.

Montana Department of
ENVIRONMENTAL QUALITY

Water and Wastewater Operator Certification News

by Shirley Quick, Certification Officer

US EPA FINALIZES CERTIFICATION GUIDELINES

The U.S. Environmental Protection Agency finalized their Guidelines for the Certification and Recertification of the Operators of Community and Nontransient Noncommunity Public Water Systems and published them in the Federal Register on February 5, 1999.

These guidelines, as required by the reauthorization of the Safe Drinking Water Act of 1996, consist of nine baseline standards. These standards were developed utilizing two EPA appointed working groups and finalized taking into account the comments received. The baseline standards include 1) authorization, 2) classification of systems, facilities, and operators; 3) operator qualifications: 4) enforcement: 5) certification renewal; 6) resources needed to implement the program: 7) recertification; 8) stakeholder involvement; and 9) program review.

These guidelines provide States with the minimum standards for the development, implementation and enforcement of operator certification programs for community and nontransient noncommunity public water systems. Beginning two years after publication, EPA must withhold 20% of the States Drinking Water State Revolving Fund capitalization grant funds unless the State has adopted and is implementing an operator certification program that meets the requirement of these guidelines or submits its existing program that is substantially equivalent to these guidelines.

If you would like a copy of the guidelines, contact the Safe Drinking Water Hotline, toll free (800) 426-4791.

The Montana operator certification program reviewed the draft guidelines and submitted their comments to EPA in June 1998. Shirley Quick will submit the Montana program to EPA for approval following receipt of final submittal information from EPA. If you would like to see the complete guidelines, check out the **EPA web site:** www.epa.gov/fedrgstr/epa-water/1999/february/day-05/w2692.htm

CERTIFICATE BELONGS TO THE OPERATOR, NOT THE SYSTEM

The Administrative Rules of Montana, 17.40.203(5), provide: "The department shall issue a certificate to the applicant if the applicant meets all requirements of this chapter for certification. The **certificate is only valid to the person to whom it is issued and may not be transferred to another person.**"

This rule means that the certificate is given to the operator who passes the exam and meets the experience requirement, even if the system pays for the exam and the renewal fees. If an operator leaves the system, the certification goes with them.

This also means that no one else should use the certification number of the certified operator on monitoring or other records. Unless the certified operator took the sample, the certification number should not be used.

However, the system owner is responsible for having an operator in responsible charge of their water or wastewater system. To ensure that they are in compliance with the public water supply requirements, all systems should check to be sure that their operator is meeting the training and renewal fee requirements.

SOURCE WATER PROTECTION CD-ROM AVAILABLE

Kevin Kundert of the Montana University System Water Center announced that the Source Water Protection interactive CD-ROM is completed. This CD-ROM was developed to assist trainers and operators of small public water systems in the development of a source water protection plan.

The Continuing Education Credit Review Committee is in the process of an evaluation to determine how many CECs will be available for completing the training portion of the CD-ROM.

To order a copy of this CD-ROM ($20), call 406/994-7738 or e-mail water@montana.edu.

CEC TIBDITS

It's that time again, CECs (continuing education credits) are due on June 30, 2000. This leaves you with less than 1 year to complete your requirements. We will be sending you a CEC status report in December. If you would like one sooner than that, or would like information regarding the CECs that you may or may not have, please contact the certification clerk at the Water / Wastewater Operator Certification Office at (406)444-3434).

There are several ways to obtain CEC credits. You may attend an approved course, complete an approved correspondence course, or apply for a course to be approved by our CEC approval committee. Please call 444-3434 to obtain information on any of these options.

Reminder: Operators-in-Training are not required to earn CECs

Montana Department of
ENVIRONMENTAL QUALITY

Don't Forget!

Spring Water & Wastewater Exams
March 2000
Will be held in SEVEN LOCATIONS!

To receive application information, call Tausha Smith at (406) 444-3434
or return the bottom of this page to:

Department of Environmental Quality
Water and Wastewater Operator Certification
PO Box 200901
Helena, MT 59620-0901

✂ -

Water and Wastewater Operator Certification

	1	2	3	4	5
A - Water Distribution	—	—	—	—	—
B - Water Treatment	—	—	—	—	—
C - Wastewater Treatment	—	—	—	—	

Name: _____ Operator #: _____

System Name: _____

Mailing Address: _____

City/ State/ Zip: _____

Montana Department of
ENVIRONMENTAL QUALITY

MATH REVIEW FOR CERTIFICATION EXAM

Montana State University
Strand Student Union Building
Bozeman, Montana

September 30, 1999
Thursday ~ 1:15-4:30 p.m.

This session is intended to review basic math for those who have applied to take examinations for certification on Friday October 1, 1999. You will never learn everything you need to know at a water school to pass the exam OT to be a competent operator. The study materials we provide and suggest are designed for home study.

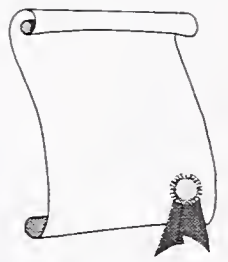
Additionally, during the Water School in Bozeman, September 27-30, 1999 there will be sessions covering basic material related to water and wastewater treatment. The sessions are organized to cover treatment-related math and concepts. Training staff will be available each day to help answer questions you may have from your self-study, and to give you an overview of information.

Since these sessions are designed for entry-level operators who do not need to acquire continuing education credits (CECs), no CECs will be given for Thursday Afternoon or the basic track sessions during Water School.

For more information, call Tausha Smith
DEQ Water/Wastewater Operator Certification Office
406/444-3434

Montana Department of
ENVIRONMENTAL QUALITY

APPLICANTS PASSING EXAMINATIONS FOR FULL CERTIFICATION OR OPERATOR-IN-TRAINING (OT) 1999 EXAMS INCLUDING: 1999 SPRING WATER SCHOOL 1999 MRWS CONFERENCE OFFICE EXAMS



NAME	*CITY*	*CLASS 1'S*
BIES, Glenn C.	Laurel	1C
BOYD, Lance C.	Conrad	1B (OT)
CRAMER, Jodie A.	Everett WA	1C (OT)
EISCHEID, James J.	Havre	1A (OT) & 1B (OT)
FALLOWS, Thomas E.	Hamilton	1C
FISHER, Kevin W.	Missoula	1C (OT)
GALLAGHER, Neil P.	Whitehall	1C
HELLAND, Jack L.	Miles City	1C (OT)
KAMPEN, Peter G.	Whitefish	1C (OT)
MCPHERSON, Lucky	Gardiner	1C
NEFF, Gary L.	Havre	1C (OT)
PARKE, Brad M.	Hamilton	1C
RICHINS, Nicole	Three Forks	1C (OT)
SCHARF, Darrell R.	Whitehall	1C
SHEA, Daniel G.	Butte	1C (OT)
SHIELDS, Leroy	Fort Belknap	1B
SPARKS, David J.	Billings	1B
WALTER, Galen C.	Billings	1B
WEISS, Keith K.	Glendive	1B (OT)
WICKS, Robert W.	Billings	1A

NAME	*CITY*	*CLASS 2'S*
BANDELL, William A.	Lewistown	2A3B (OT)
CANEN, Raymond J.	Hinsdale	2C (OT)
DIAZ, Ralph	Browning	2A3B (OT)
ECCLESTON, Carl E.	Anaconda	2A3B (OT)
LOUDERMILK, Andrew	Kalispell	2A3B (OT)
MARSHALL, Larry	Helena	2C (OT)
PUCCINELLI, Paul D.	Anaconda	2A3B
REID, Kevin B.	Kalispell	2A3B (OT)
SALISBURY, John A.	E. Glacier	2B

NAME	*CITY*	*CLASS 3'S*
ARCHEY, Randy J.	Belt	3C (OT)
ARCHEY, Randy J.	Belt	3A4B (OT)
BODE, Raymond P.	Billings	3C
BRADEN, Brad I.	Wibaux	3A4B
COATSWORTH, Michael	W. Ylwstone	3A4B
ECKERT, Harvey	Ennis	3A4B
FREY, Raymond	St Ignatius	3A4B
HENSEL, Brian J.	Missoula	3A (OT)
HOWEL, Mark W.	W. Ylwstone	3A4B
HUIDEKOPER, Leona	Choteau	3C (OT)
IRELAND, Daniel J.	Superior	3A4B (OT)
JENSEN, Andy H.	Absarokee	3A4B (OT)
JONAS, DeAnne K.	Billings	3A
LEWIS, Lee C.	Townsend	3C (OT)
LONGKNIFE, William	Fort Belknap	3A
MORITZ, Douglas W.	Conrad	3C (OT)
MORTON, Scott	St. Ignatius	3A4B (OT)
O'CONNOR, Brent M.	Fort Benton	3C (OT)
PARKER, John T.	Box Elder	3C
PIPPIN, David L.	Glasgow	3C (OT)
REARDON, James T.	Hingham	3A
SHELDON, Glenn R.	Hot Springs	3C
WASLEY, Roger S.	Superior	3A4B (OT)

NAME	*CITY*	*CLASS 4'S*
ANDERSON, Neil W.	Reserve	4C (OT)
BAREFIELD, Pamela A.	Bonner	4AB
BERGER, Larry	Simms	4C (OT)
BRAMLETTE, Robert G.	Highwood	4AB
BROWN, Gary L.	Cooke City	4AB
BURCH, Charles F. Jr.	Fort Peck	4C
BURGESS, Gerald E.	W. Glacier	4AB (OT)
CARLSON, Karl J.	Billings	4A
CARLSON, Lyle A.	Fairview	4C
COLLINS, Joseph W.	Big Fork	4AB (OT)
COOK, Mark A.	Billings	4A
COUILL, Frederick S.	Ryegate	4AB (OT)
CRISP, Kelly A.	Missoula	4AB (OT)
DAFOE, Robert W. Jr	Chester	4AB
EAKMAN, Jonathan C.	Great Falls	4AB (OT)
ECKERT, Harvey	Ennis	4C
ENTZ, Paul J.	Cut Bank	4C (OT)
FROSLIE, David C.	Kevin	4AB (OT)
GURAN-EUBANK B.	W. Glacier	4AB
HOERNING, David M.	Helena	4AB
HOFER, David D.	Choteau	4AB
HOFER, David J.	Sunburst	4C
HOFER, Jacob J.	Pendroy	4AB (OT)
HOFER, Jacob J.	Pendroy	4C (OT)
HOFER, Joe S.	W.S.S.	4AB
HOFER, Philip J.	Sunburst	4C
HULL, Charles G.	Corwin	4AB (OT)
KAMPEN, Peter G.	Whitefish	4AB (OT)
KETCHAM, Stephen W.	Decker	4AB & 4C
KLEINSASSER, David D.	Ulm	4C & 4AB
KLEINSASSER, Mike S.	Valier	4AB
KLEINSASSER, Steven	Valier	4AB

Montana Department of Environmental Quality

APPLICANTS PASSING EXAMINATIONS FOR FULL CERTIFICATION OR OPERATOR-IN-TRAINING (OT) 1999 EXAMS INCLUDING: 1999 SPRING WATER SCHOOL 1999 MRWS CONFERENCE OFFICE EXAMS

NAME	*CITY*	*CLASS 4'S*
KLEINSER, Jacob J.Jr.	Chester	4AB & 4C (OT)
KNUDSEN, Rick D.	Potomac	4AB
KOSCIESZA, Joseph B.	Bozeman	4AB (OT)
KRUGER, James A.	Kalispell	4AB
MARVIN, John O.	Opheim	4AB (OT) & 4C (OT)
MENARD, Roland R.	Box Elder	4C
MERJA, Charla A.	Simms	4AB
NEVILLE, Gregory D.	Custer	4AB (OT)
NEWMAN, Howard	Missoula	4AB
PAULSON, Allen M.	Decker	4AB (OT)
PAULSON, Allen M.	Decker	4C (OT)
QUINN, Tami	Dutton	4AB (OT)
QUINN, Tami	Dutton	4C (OT)
SALISBURY, John A.	E. Glacier	4A
SCHAAF, Les R.	Saco	4AB (OT)
SEYMOUR, Clifford	Park City	4C (OT)
SHIELDS, Bryan R.	Helena	4AB (OT)
SITZMAN, Walter L.	Park City	4AB
SPENCER, Phillip D.	Libby	4AB
STAHL, John E.	Missoula	4AB
TOMSCHECK, Robert	Sunburst	4AB
TRONSTAD, Ralph D.	Augusta	4C
VIERS, Russell Jr	Livingston	4AB
WADSWORTH, Larry	ThompsonFalls	4AB (OT)
WALDNER, John J.	Choteau	4AB & 4C (OT)
WALDNER, Joseph P.	Chester	4C
WEBB, J. Dean	BearCreek	4A
WILLIAMS, Lawrence	Fort Smith	4A
WIPF, Elias D.	W.S.S.	4AB
WIPF, Jacob J.	Belt	4C (OT)
WIPF, Paul S.	Choteau	4AB & 4C (OT)
WIPF, Peter J.	Belt	4AB (OT)
WURZ, Joe A.	Chester	4AB
WURZ, John J.	Chester	4AB
WURZ, John J.	Chester	4AB
ZAHN, Richard J.	Twin Bridges	4AB

NAME	*CITY*	*CLASS 5'S*
BISHOP, Randy L.	Bynum	5AB
BREEDING, James A.	Roundup	5AB
CUTLIP, Edgar L.	Sand Coulee	5AB
DAVIS, Michael J.	Bozeman	5AB
DUMONT, Toby J.	Bonner	5AB
FISHER, Bill	Missoula	5AB
FRANK, Steven J.	Laurel	5AB
HAFFEY, Thomas P.	Missoula	5AB
HARMON, Patrick	Chester	5AB
JENSEN, Jean	Heron	5AB
LANKTREE, Donald	Big Fork	5AB
PRATT, Patrick F.	Big Timber	5AB
REES, Karen A.	Ramsay	5AB
REES, Roland T.	Ramsay	5AB
RICHINS, Nicole	Three Forks	5AB
RITCHEY, Clinton	Alberton	5AB
ROBERTSON, Clifford	Kila	5AB
SMITH, James J.	Bozeman	5AB
STACY, Martha	Hall	5AB
WALLACE, James	Hamilton	5AB
WROBEL, Raymond	Great Falls	5AB

KEY

A = Water Distribution Operator
B = Water Treatment Operator
AB = Well Water System Operator
C = Wastewater System Operator
D = Industrial Wastewater System Operator
(OT) = Operator-In-Training

CONGRATULATIONS! To all of the above operators who passed their examinations. The Examinations require considerable time in study and preparation. Passing the examination represents a lot of hard work and initiative on the part of the individual. Be sure to show your appreciation to your water and wastewater operator for working hard to ensure that they are properly trained to care for your system.

The Select Society of Sanitary Sludge Shovelers

As implied by the name, this is a "select society" of members of the Montana Water Environment Association (MWEA) having no charter, constitution, by-laws, dues, meetings or other formal structure. Of course, meetings of the S.S.S.S.S. (5Sers) do occur at various MWEA functions, like the annual conference and mid-year board meetings, and certain protocols have developed over the years since the inception of the MWEA chapter of the Select Society in 1986.

You will recognize these society members by the gold shovel proudly displayed as lapel pins or tie clasps or worn in other ingenious fashion. There are certain penalties for not wearing one's shovel at official MWEA functions. However, the price one must pay is not prescribed by rule, but rather by social convention and general ridicule by other shovelers.

Tim Hunter was instrumental in establishing the Select Society in Montana as a way to honor those hard workers within MWEA that are not generally recognized by other awards, like the Bedell and Hatfield. Tim has served honorably (?) as the influent integrator for the other Shovelers since that time. The induction ceremonies at the annual conference require skill, dexterity and the ability to remember and repeat silly, sibilant phrases rapidly, all of which is designed to totally embarrass the new floc members.

Although the Society has no formal structure, the criteria used to consider new members include the following: MWEA member in good standing; active participation on committees and/or serving as committee chairs; presentation of papers or talks at conferences, seminars, civic meetings, etc.; outstanding contributions to field of wastewater treatment; promotion of new MWEA members; outstanding educational efforts; long term service of 5 years or more; and, continue to be active in MWEA.

The MWEA Select Society of Sanitary Sludge Shovelers (influent year): Tim Hunter, pH7 ('86); Jan Cranor ('86); Joe Steiner ('86); Deanna Anderson ('86); Kristi Kline ('86); Dick Nisbet ('87); Howard Peavey ('87); Rodney James ('87); Dick Montgomery ('87); Bill Pasco ('87); Barry Damschen ('88); B. Warren Meyers ('88); Scott Anderson ('94); Craig Brawner ('94); Bill Bahr ('95); Rob Balderston ('95); Paul LaVigne ('96); Paul Montgomery ('96); Karen Bucklin Sanchez ('98); and, Dan L. Fraser ('98).

On a final note, the shovelers handshake is truly indicative of the profession so dubiously honored by membership in the Select Society.

New Employees in Public Water Supply Section

We have 3 new employees in the PWS Section of the Community Services Bureau:

Gene (Gino) Pizzini has replaced Rick Duncan as a water quality specialist. His primary responsibilities will be compliance monitoring and coordination of enforcement activities with the Enforcement Division. Gino has a degree in Environmental Health from MSU-Northern and has worked for the City of Great Falls, Lewis and Clark City-County Health Dept. and for the PWS Section as a temporary hire.

Ryan Welsh has replaced Cavin Noddings in our Billings Office as an environmental engineer. His primary responsibilities will be compliance inspections, plan review and technical assistance. Ryan has a degree in civil engineering from MSU.

Max Lauder was hired into a new half-time position in our Kalispell Office as an environmental engineer. His primary responsibilities will be compliance inspections, plan review and technical assistance. Max is a licensed professional engineer, and has 33+ years combined experience as an engineer in the military, USFS and in consulting.

On behalf of DEQ, I wish to welcome these new folks - we are very fortunate to have them. Please stop by to say hi if you get a chance and let them know what you do for DEQ!

Montana Department of
ENVIRONMENTAL QUALITY

AWWA Satellite Conference

The New Disinfection By-Product and Surface Water Treatment Rules: Operational Issues and Treatment Strategies is the topic of the next AWWA Satellite Conference.

The conference will cover the impacts on utilities of the Stage 1 Disinfectants/Disinfection By-Products Rule and Interim Enhanced Surface Water Treatment Rule.

You'll learn how to comply with these rules without triggering violations of other rules. Also covered will be the tools and techniques available to water utility operators and how to implement these tools and techniques. You'll hear what operators across the country are doing to help their utilities comply with the rules.

The conference is scheduled for November 9, 1999 from 10 am to 1:30 PM. You will receive a brochure with more details in September.

Once again, the conference will be available for viewing at six Montana locations:

- ***Billings Career Center in Billings,**
- ***MSU Water Center in Bozeman,**
- ***Hagener Science Center at MSU Northern in Havre,**
- ***Montana Power Company in Butte,**
- ***Office of Public Instruction in Helena, and**
- ***Adult Education Building of the Missoula County Public Schools in Missoula.**

The brochure you'll receive will contain more details about locations and costs. If you have questions, please contact:

Scott Murphy, Education Committee Chair, at 406-442-3050.

Thoughts from the MSAWWA Chair

Donna Jensen

1999 is a significant year for the Montana Section of AWWA. Not only is it our section's 75th anniversary (a cause to celebrate in itself), it also marks important financial and membership milestones for our organization. This year presents unique opportunities to celebrate our history and long term dedication to safe drinking water in Montana. It also prompts us to look outward and reaffirm our commitment to protection of public health and development of the water industry as a whole.

To me, historical perspectives are important. They show us the roots on which our values and goals are based. Consider the early Montana water professionals who met and petitioned AWWA for Section membership in 1924. How could they have guessed our expected life span would nearly double in 75 years and the list of recognized waterborne threats to health would appear endless? Would they be proud of this organization they formed? I think they would. From a handful of men to a roster of over 230 members, this section has incredibly high participation for the population of our state.

What does this mean for our future? Endless potential! The Montana Section of AWWA has never before been so well funded. More importantly, we have a lot of new faces with fresh energy and interests, we have many well seasoned professionals with knowledge and mentoring to share, and we have a dedicated support staff to help implement ideas.

Lets get started. Look over the committee rosters and stir up activities on committees you're on or want to join. Brainstorm on what we can do. Consider school programs for elementary and middle/high-school kids. MSAWWA can provide materials; we just need volunteers to provide them to schools, classes and other groups who may benefit from hearing about our profession. Consider working though the Public Information or Small Systems committees to develop public announcements to precede release of your Consumer Confidence Reports. Consider working with the Education and Program committees to bring to Montana a special seminar or speaker we'd benefit from having locally. Consider helping Water for People raise funds to support our efforts in Honduras. Consider anything new that can keep us moving along to meet your needs and to demonstrate to the public we're committed to high quality drinking water at a reasonable cost. Nothing is stopping us except our hesitation to start. Getting started is easier than you think.

MWEA President's Message

Karen Bucklin Sanchez

The Montana Water Environment Association's year begins and ends with the Joint Annual Conference every spring. The '99 Joint Conference in Billings last April was a good way to wrap up one year and to begin this one. A record number of people attended the Billings Conference and next year promises to be better. Next spring we meet again April 19-21 in Helena. At the 2000 Conference, we will be celebrating the past and looking toward our future.

As incoming President, I've thought a lot about what the year 1999-2000 should and could hold. For example, think about how our professions have evolved over the last 100 years. What will this next year - and the next 20 and the 100 - bring? How will MWEA influence what will happen in the future? What goals can MWEA accomplish in the coming year? What about in the long term? What about the end of one millennium and the start of another?

What do you envision for the future of our MWEA? Our association's and our members' professional concerns are one and the same. Efficiency in operations and management, competition, "Qualserve" and just trying to communicate what it is we do and why it is of value to our customers is the focus of much of our time each day, not to mention just keeping up with technical and regulatory developments and trends.

What does this year hold?

A WEF Small Member Assessment is to (by the publication of this article, it will) be done in July 1999. WEF's "Small Member Association Task Force" assists small Member Associations (MA's) like ours. There are only 7 MA's under 200 members - MWEA has 137 members, so we fit the bill. The assessment will review the resources and needs of our association and determine services & assistance WEF may provide to small MA's. I'll keep our membership posted on the outcome of this. Do you have some specific ideas about what resources WEF could provide for Small Member Associations like ours? I would appreciate ideas from MWEA members.

Did you know that MWEA Committees are the core of MWEA? Have you served on an MWEA committee? It's time you do! It is rewarding and your help is needed. A list of committees is included in this issue of the Clearwater and all members have received one in the mail. Just call the Chair and sign up! I promise, you won't regret it.

What about the next 20 years? What do you see for our association in 2020? What about our industry and our professions? The Long Range Planning Committee is updating our plan and needs your input.

I think that us so called "dirty water folks" will be perceived as protecting the public health as much as the "clean water" side of things. The public is becoming very aware of wastewater - in terms of more than just flushing the toilet and forgetting it.

MWEA President's Message (cont.)

There are pros and cons to this, of course. Us wastewater folks should take a cue from the experience of the drinking water side. If we don't take the wheel and educate the public about wastewater issues, others will. This has been the experience of drinking water professionals. It's true: It won't be OK to just do a good

job anymore. We need to get the word out about wastewater issues - and promote our professionalism.

The Education Committee, the Government Affairs Committee, the Biosolids Committee, the Honors and Awards and the Safety & Heroism Committees and the Joint MSAWWA/MWEA Public Information Committee are responsible for various aspects of this task. The members do everything from public awareness and information to public recognition of the job our Montana wastewater professionals are doing to providing professional continuing education opportunities. What are the top issues that MWEA Committees should focus on?

Our future depends too, on continuing to attract new members. When I look on why I joined MWEA, it was because I was encouraged to by people I respected. In school, at Montana State University, my professor, Dr. Amirtharajah, encouraged all students to join both MWEA and MSAWWA. Later, my supervisor, Scott Anderson at the MT DEQ "encouraged" membership for all of his employees. It is this emphasis on membership that allows our association to grow and to provide each of us with a fraternity (or, a sorority?!) of people we can turn to and rely on for professional assistance and guidance. Without this camaraderie and diversity and new members, our association would not be worth much. I encourage all supervisors to provide or encourage membership in MWEA for all of their employees. The Membership Committee needs your ideas and help in rustling up members. The Joint Scholarship Committee needs your input on attracting young members to our profession and association.

MWEA provides assistance to each and every Montana member - whether through training opportunities, through publications or just through feeling connected to other professionals.

This year is <u>your</u> chance to get involved. Make a commitment to add to our association. MWEA needs each member's input so this is not an association of a few people making all of the decisions. What can you do? At a minimum, provide input to the Board Members and Committee Chairs on issues important to you & what you think needs to be included in the scope of work MWEA does, join a committee and participate, promote MWEA and the advantages of joining our association to other wastewater professionals.

It is on the shoulders of each and every one of us to decide where MWEA will be in 2000 and what being a wastewater professional will mean to you and to your rate-payers and to the general public in your lifetime and beyond. I encourage you to pick up the phone and join a committee and become an active MWEA member!

Montana Department of
ENVIRONMENTAL QUALITY

The 1999 MWEA/MSAWWA Joint Conference was a Success!

The Montana Water Environment Association (MWEA) and the Montana Section of the American Water Works Association (MSAWWA) held their annual conference this past April at the Holiday Inn in Billings.

The MWEA Preconference Seminar kicked off the conference on Wednesday, focusing on the Benchmarking and QualServe programs of WEF and AWWA. Nationally recognized speakers, Bud Benjes, WEF Vice President Joe Stowe and AWWA Past President Bevin Beaudet, cited methods and examples for utilities to model in order to be more efficient, especially in the face of increasing competition. The afternoon portion, which included segments of the Peter Sandman video, "Risk = Hazard + Outrage: A Formula for Effective Risk Communication" and a panel discussion, was extremely well received. A copy of this highly recommended video is available to check out from the Montana Environmental Training Center (METC) by calling Jan or Barb at 406-454-2728.

The Joint Conference began in earnest Wednesday evening with the vendor-sponsored ice-breaker and social hour. Conference sponsors and vendors deserve a huge thank you for supporting this annual conference.

The Technical Program, "Stewardship of Public Health and the Environment" opened Thursday morning with a presentation by David Torgerson of Olympus Environmental, who shared experiences related to the 1996 Alberton train derailment and chlorine release incident. The Technical Program continued through Thursday afternoon and Friday morning and featured a variety of stimulating sessions for both water and wastewater professionals. Program topics included: consumer confidence reports (an EPA requirement which takes effect this fall), UV disinfection system selection process, alternative treatment technologies, water rights issues, state revolving fund set-asides and information for complying with new rules and regulations.

The conference activities included luncheons and an awards banquet. Overall, the conference was well received by the large number of attendees. Many, many thanks to the local Host City committee and the rest of the staff and volunteers, without whom such an undertaking would not be possible.

The 2000 conference will be held April 19-21 in Helena at Cavanaugh's Colonial Inn. Mark your calendars now.

Montana Department of Environmental Quality

The 1999 Joint Conference Awards

AWWA Safety Awards
Lockwood Water Users
City of Three Forks
Anaconda - Deer Lodge County Water

AWWA Safety Award of Excellence
City of Columbia Falls - for many hours of work without an injury

AWWA Water for People - presented to MSAWWA by Bevin for contributions this year to help rebuild drinking water systems in the Honduras after Hurricane Mitch.

MWEA Biosolids
City of Bozeman

MWEA Operator of the Year
Starr Sullivan

AWWA Operators Meritorious Service award
Brian Roark, Sunburst

MWEA Small Systems
City of Forsyth

WEF George F. Burke, Jr. Award
Lakeside County Water & Sewer

George W. Fuller Award
Henry Elbrecht

Service awards
Director, MWEA Bill Bahr
Past President , MWEA Mike Jacobson
Past Chair, MSAWWA Dan Fraser

Life Member Award
Mike Thomas, City of Billings, Public Utilities Dept. (30 years of service & membership)

Water for People (silent auction)
Fishing net donated by Joe Steiner -- purchased by Bevin Beaudet
Don Greytak sketch donated by Shelley Nolan and Carolyn & Dean Chaussee -- purchased by Bob Fuller
Painting donated by John Campbell -- purchased by Bill Leonard
Dog picture donated by Donna Jensen -- purchased by Kristi Kline
Rocky Mountain shirt & hat donated by John Campbell -- purchased by Fred Phillips

Montana Department of
ENVIRONMENTAL QUALITY

Call for Papers

The Program Committee has issued a Call for Papers to be presented at the 2000 Joint Annual Conference scheduled in Helena next April 19-21. The Conference technical sessions will be developed from both submitted and solicited papers. Papers should be on a subject of specific interest to Montana: water, wastewater or solid waste treatment; conservation; corrosion control in water distributions systems; alternative treatment and disinfection processes; pilot studies; biosolids management, etc.

Presentations are typically 30 minutes in length. Written papers may be used to present more extensive and comprehensive topics. Papers will be chosen from abstracts or ideas submitted on or before October 31, 1999.

Please complete a copy of this submittal form and attach a copy of your abstract. Abstracts must be no longer than 500 words in length (two pages, double-spaced) and should include the speaker's name.

Abstract submittal form
(A copy of this form must accompany all abstracts)

Title of Paper
Speaker
Co-authors
Affiliation
Street address
City State or Province Zip
Daytime phone Fax
Audio/visual needs (check items required for presentation)
Slide projector Video Overhead projector Powerpoint projector

Speaker biography: (Use a blank sheet of paper or submit attached biography)

If you are not interested in giving a paper but have burning issues you would like addressed, please contact the Program Committee at the address listed below with your suggestions. Send copies of abstracts or written suggestions to:

MSAWWA/MWEA
505 South Roberts
Helena, MT 59601
(406) 443-5388 Fax (406) 443-5656

Montana Department of
ENVIRONMENTAL QUALITY

MSAWWA Director's Report

Dan Fraser

Both Chip Johnson and I attended the Board of Directors' meeting held in conjunction with AWWA's annual conference in Chicago June 19-24, 1999. This short report is written prior to my receipt of the meeting minutes and is intended to address two of the Board's agenda items that I believe to be of most interest to members of the Montana Section of the American Water Works Association (MSAWWA).

Section funding increase. The Section Management Committee drafted options for increasing sections' funding based on a request by the Board to do so. These options were the focus of a Special Board Session held on Saturday June 19, 1999. The results of the Special Session allowed the Board to pass a motion to address increased funding at the regular meeting held Sunday, June 20th. The motion, as passed, increases the minimum allotment for small sections such as ours from $8,000 per year to $15,000 per year while eliminating the Special Allotment Program that we have used in the past for funding one-time projects. The increase in funding will be very helpful for our section and should enable us to be more active and provide more service to Montana's water industry.

Capacity development program. Awa's Small Systems Policy Committee has proposed that AWWA develop a nationally coordinated Capacity Development Program. The envisioned program would consist of three major components:

1. National Capacity Coordinator: The program would provide funding for a full time position in Denver to coordinate the capacity program, provide training to section-level staff, and provide a central clearinghouse for small system capacity.
2. A Capacity Development Tool: An assessment tool would be developed for section staff to use to assess capacity of small systems and to develop options or strategies for improving capacity.
3. A Pilot Program: A capacity program would be developed in five sections and would operate beginning late 1999 and run into 2000. The selected sections would contract with coordinators who would conduct site-specific capacity assessments and evaluations of small water systems. For each system a report would be written that identifies specific problems and provides guidance for options to correct the problems and enhance capacity. As proposed, the initial program would require an expenditure of $131,300 in 1999. The complete program involving all sections, if adopted, will exceed $1.8 million per year. The Board of Directors did not take final action on this proposal but has taken it under advisement and will make a decision at a later date based on a prioritization of funding requests.

I am interested in hearing from MSAWWA members regarding their opinions of this proposal. Is this a good use of AWWA funds? Is it an effort that we could make work in Montana? Please contact me at 443-4173 or dfraser95@aol.com.

MWEA Directors Message

Scott Anderson

What can your organization do for me?

This question often gets asked when talking with new prospective members for the organization and the response will typically be somewhat vague and undefined. The new prospect may then conclude that the MWEA doesn't have a lot to offer, which most active members would suggest that this is not the case.

True, it is difficult to provide a quantifiable answer to the question. For your membership fees you do receive an excellent technical publication but most busy professionals today likely find it difficult to find the time to take advantage of the document. You become a member of both the state and national organization, which brings certain privileges, cost savings and access to a wealth of information. Again, this benefit may or may not offset the monetary cost of membership.

One of the primary benefits of the MWEA is that it provides an individual the *opportunity to participate*. In other words, members that join the MWEA generally enjoy the old adage "you get out of it what you put into it". This, unfortunately, is difficult to measure but the benefit truly exists. Outside of family, a persons working career is probably the most important, time consuming, stressful, monetarily beneficial and demanding activity that occurs over a course of one's lifetime. Those that work in the field of water pollution control or wastewater treatment typically have strong motivating factors for working in this field—it's fun, huge salaries, protects the environment, love of microorganisms or whatever the reason might be. Membership in the MWEA allows you to develop and enhance those motivators, which brought you to work in this field.

The MWEA allows you to work with your peers, your competitors, and your regulators on an informal basis where the normal workplace problems are left aside. You can discuss technical issues and share ideas with peers in a sociable format that does not exist in your job setting. As you become involved in committees, you can participate in activities that might directly impact your job. As an example, the MWEA government affairs committee can testify to the legislature on laws that govern water quality in the state and possible define your work responsibilities. As a Board Member, you are provided the opportunity to direct the organization itself and ultimately participate in activities of the national organization. If you are so motivated, you can set (or shake) the foundations of the wastewater profession itself!

The technical knowledge and resources found within the state association together with the national federation is unsurpassed in the world. The excellent technical discussions held at the annual MWEA/MSAWWA Montana conference continue to address current issues and state of the art technologies. The Water Environment Federal national conference and huge vendors show provides libraries of current material and acres of equipment displays.

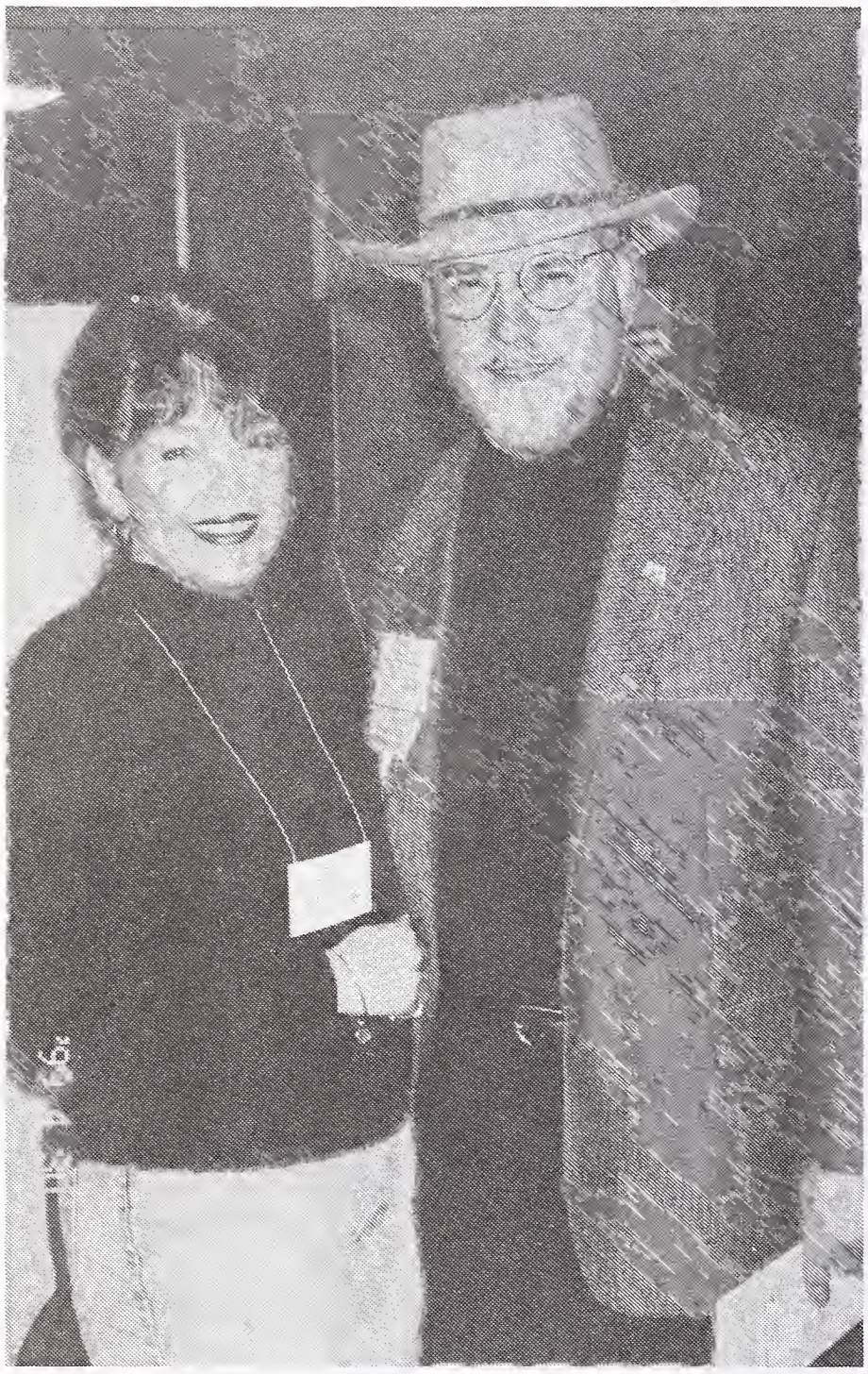
As National Director of the state association, I would invite all prospective members to join up and invest some time and energy into the organization. I believe (no I am sure) that in doing so you will find that you will meet some new people, develop some new ideas, and be provided the opportunity to participate in an organization committed to helping and educating Montana's water professionals. Eventually you too will come to realize that benefit of your involvement in the organization to yourself, your job understanding, your career and those working with you readily outweighs the investment of time and money you have made.

1999 Conference Photos

Tim must be accusing
Dan of something

There's some serious work going on here.

1999 Conference Photos



AWWA Past President
Bevin Beaudet and
his wife, Diane.

MWEA President, Karen Bucklin Sanchez, and Education Committee Chair, Scott Murphy, trying to figure out what happened to the preconference schedule.

1999 Conference Photos

Kristi Kline, Dave Aune, Craig Brawner and Kate Miller Swanson. "What else needs to be said?"

Wynn and Gary Pippin and Erl Tufte: "Voted as the three most likely to have a good time."

1999 Conference Photos

WEF Vice-President,
Joe Stowe and his wife, Kay.

As the old gamblers would say:
"Dan Fraser and Mike Patterson,
what a pair to draw to."

Montana Department of
ENVIRONMENTAL QUALITY

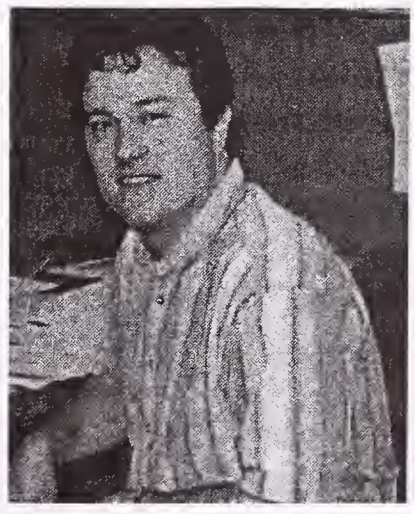
New Source Water Protection Staff At DEQ!!!

SOURCE WATER PROTECTION SECTION STAFF IS GEARING UP FOR IMPLEMENTATION

THE SOURCE WATER PROTECTION TEAM AT DEQ (from left- James Swierc, Joe Meek, Russell Levens)

The Source Water Protection section in DEQ's Pollution Prevention Bureau recently hired James Swierc into the vacant water quality specialist position. James comes to DEQ from Fort Belknap College in north-central Montana where he worked as an educator and technical resource person. James also brings to DEQ his experience from several years in the environmental consulting field both in Montana and other locations around the country. He will join Russell Levens in implementing the source water protection program and will be helping DEQ provide support to Montana's local water quality districts.

James can be reached in Helena at (406) 444-6697 or by E-mail at swierc@state.mt.us.



THE 66th ANNUAL WATER SCHOOL
FOR WATER & WASTEWATER OPERATORS & MANAGERS
TENTATIVE PROGRAM
September 27 – 30, 1999
Certification Exams, October 1, 1999

2.35 CECs total (Dual CEC classes noted as: dcec) (Please note: NO CEC's will be given for the Basic sessions.)

MONDAY, SEPTEMBER 27, 1999			
TIME	*JOINT MORNING SESSIONS (A)*		
7:30 AM	*Registration*		
8:30 AM *0.05dcec*	**Welcome to the 66th Annual Fall School** *Dean Gibson, MSU College of Engineering; Dorothy Bradley, MSU Water Center; and Jan Boyle, Montana Environmental Training Center*		
	Water School Agenda and Special Features - *Staff*		
9:00 AM *0.025dcec*	**Operator Certification Q & A** *Shirley Quick, DEQ Operator Certification Officer*		
9:15 AM *0.05dcec*	**Drinking Water State Revolving Fund Technical Assistance Program** *Marc Golz, DEQ DWSRF*		
9:45 AM	*Break*		
10:00 AM *0.15dcec*	**Water and Wastewater System Evaluations – Providing for Tomorrow by Planning Today** *Dan Fraser, SouthHills Environmental Consultants, and Tim Hunter, HDR Engineering*		
11:30 AM	*Lunch*		
CONCURRENT AFTERNOON SESSIONS: MONDAY, SEPTEMBER 27, 1999			
2:00PM- *4:00PM*	*Sign-Up Sheet Available* *46 persons per session*	*INTERACTIVE SPECIAL SESSION: MONDAY, 2:00PM-4:00PM* *EPS BUILDING (BURNS TELECOMMUNICATION CENTER)* *RM# 128J MJ Nehasil, MSU-Water Center & DEQ- SWP*	
TIME	*BASIC TRACK (D)*	*LARGE & SMALL WATER SYSTEMS (A)*	*WASTEWATER SYSTEMS (275/276)*
1:00 PM	**Operator Certification** *Shirley Quick [all exams]*	**Rule updates: CCR, SWTR, Capacity Development, Public Notice, LT1&2, DBP Rule, GW Rule, Coliform Rule, Backwash Recycling, GWUDISW** *Speakers invited _____, 0.2cec*	**Wastewater Treatment in Montana** *Bill Bahr, DEQ WPCSRF Program* *0.2cec*
1:30 PM	**Formulas** *Barb Coffman [all exams]*		
3:00 PM	*Water School Vendor Show (B/C)* *Meet the Vendors- Food- Door Prizes*		

Montana Department of ENVIRONMENTAL QUALITY

CONCURRENT MORNING SESSIONS: TUESDAY, SEPTEMBER 28, 1999			
TIME	*BASIC TRACK (D)*	*LARGE & SMALL WATER SYSTEMS (B/C)*	*WASTEWATER (275/276)*
8:00 AM	**Technical Terms** *Denver Fraser, DEQ [all exams]*	**Everything You Wanted To Know About Pumps & Motors** *Waterworks Industries Inc.* *0.2dcec*	**Wastewater Microbiology** *Dr. Carol Reifschneider, MSU-Northern 0.2cec*
9:00 AM	**Volume & Area** *Rick Cottingham, DEQ [all exams]*		
10:00 AM			
10:15 AM	**Hydraulics** *Craig Pagel, DEQ [all exams]*	**Everything You Wanted To Know About Pumps & Motors (cont.)** *Waterworks Industries Inc.* *0.175dcec*	**Advanced Wastewater Treatment: Biological Nutrient Removal** *Scott Murphy, Morrison-Maierle 0.175cec*
11:00 AM			
12:00 PM	*Lunch*		

CONCURRENT AFTERNOON SESSIONS: TUESDAY, SEPTEMBER 28, 1999					
TIME	*BASIC TRACK (D)*	*SURFACE WATER (B)*	*GROUNDWATER (C)*	*DISTRIBUTION SYSTEMS (275)*	*WASTEWATER SYSTEMS (276)*
1:00 PM	**Concentrations, Dose and Volumes** *John Camden, DEQ [all exams]*	**Polyfacts...Organic Polymers In Water Treatment** *Joe Pawlowski & Chris Staples Nalco Chemical Co.* *0.2cec*	**Well Components & Well Maintenance; Trouble Shooting** *Joe Meek, DEQ 0.2cec*	**Distribution & Safety** *Speaker invited* *0.2cec*	**Retrofitting WWTPs for BNR** *Dan Harmon, HDR Eng 0.1cec*
2:00 PM	**Loading Rates** *Jerry Burns, DEQ [1C,2C,3C,4C]*				**Process Control Strategies for Advanced WWTPs.** *Tim Hunter, HDR Eng 0.1cec*
3:00 PM	*Break*				
3:15 PM	**Lagoons: Basic Design & Troubleshooting** *Linda Hills, DEQ & Doris Roberts, MSU-N 0.175 cec (3C,4C)*	**Filter Replacement** *Thomas Getting P.E., F.B. Leopold Co., Inc.* *0.175cec*	**Understanding Delineation and Assessments on Surface and Groundwater** *Joe Meek, DEQ* *0.175cec*	**Cross Connections Rule And How To Set Up A Program** *Greg Butts, DEQ & Gary Mitchell, Mountain Water Co.* *0.175cec*	**Kalispell Advanced Wastewater Treatment Facility - BNR** *Joanne Emrick, City of Kalispell* *0.075cec*
4:00 PM					**Optimizing Treatment Plant Performance – Operator Forum** *Bill Bahr, WPCSRF 0.1cec*
5:00 PM	*Adjourn*				

Montana Department of ENVIRONMENTAL QUALITY

CONCURRENT MORNING SESSIONS: WEDNESDAY, SEPTEMBER 29, 1999

TIME	BASIC TRACK (D)	LARGE & SMALL WATER SYSTEMS	DISTRIBUTION	WASTEWATER (276)
8:00 AM	Large Wastewater Treatment Systems Review *Bill Bahr* *[IC and 2C]*	Disinfection By-Product Rule *Bob Clement, EPA* *0.2cec*	Tour of Bozeman Distribution O&M Center - *Mike Certalic, City of Bozeman* *0.2cec* Bus service available	Montana's TMDL Program *Vicki Sullivan, DEQ* *0.1cec*
9:00 AM				Nondegradation & WWTPs *Eric Regensberger, DEQ 0.1cec*
10:00 AM	*Break*			
10:15 AM	Surface Water Treatment Rule/Jar Testing *Rick Cottingham* *[IB, 2B]*	DBP RULE Continued, *Bob Clement, EPA 0.075cec*	Biofilms: Source Water to Consumers *Warren Jones & Ann Camper, MSU* *0.175cec*	Making Your Lagoon Work Better *Scott Anderson & Paul Montgomery, Neil Consultants* *0.075cec*
11:00 AM		Open Discussion with Bob Clement *0.1cec*		Collection System O&M *Scott Emerick, City of Billings* *0.1cec*
12:00 PM	*Lunch*			
2:00pm-4:00pm	*INTERACTIVE SPECIAL SESSION: MONDAY, 2:00PM-4:00PM* *EPS BUILDING (BURNS TELECOMMUNICATION CENTER)* *RM# 128J MJ Nehasil, MSU-Water Center & DEQ- SWP*		*Sign-Up Sheet Available* *46 persons per session*	

CONCURRENT AFTERNOON SESSIONS: WEDNESDAY, SEPTEMBER 29, 1999

TIME	BASIC TRACK (D)	LARGE & SMALL WATER SYSTEM (B)	GROUNDWATER (C)	DISTRIBUTION (275)	WASTEWATER (276)
1:00 PM	Groundwater Systems *Barb Coffman* *[All A&B Exams]*	Interim Enhanced Surface Water Treatment Rule (IESWTR) with Open Discussion *Bob Clement 0.2cec*	Filtration *Eric Seamen* *0.15cec*	Storage Tank O&M *Chip Johnson, DJ&A* *0.2cec*	Wastewater Laboratory: Microscopes & Meters *Fall School Staff 0.15cec*
2:30 PM			Water Treatment: New Technologies *Gretchen Rupp, MSU Water Center* *0.05cec*		Enforcement and Compliance *David Rise, DEQ 0.05cec*
3:00 PM	*Break*				
3:15 PM	Distribution Systems *Eric Minneti, DEQ* *[All Drinking Water Exams except 1B,2B,3B]*	Tour of Bozeman WaterTreatment Plant *City of Bozeman Staff, 0.175cec* Bus service available	Safety and Health (Room C) *Sandra Stapler, DL&I 0.175dcec*		Bozeman Wastewater Treatment Facility Tour *Don Noyes, City of Bozeman* *0.175cec*
4:00 PM					
5:00 PM	*Adjourn*				

Montana Department of ENVIRONMENTAL QUALITY

JOINT MORNING SESSIONS: THURSDAY, SEPTEMBER 30, 1999		
TIME	*BASIC TRACK(D)*	*JOINT MORNING SESSIONS (B/C)*
8:00 AM	**Coliforms, Sampling, & Public Notice** *Gino Pizzini* *[All A&B Exams]*	**Supervisory Control And Data Acquisition (SCADA) Systems in Water and Wastewater Facilities** *Terry Stulc, Casne Engineering (Spokane)* *0.2cec*
9:00 AM		
10:00 AM	*Break*	
10:15 AM	**Y2K Activities: Are You and Your System Ready For Y2K?** *Speakers Invited: Mountain Water, Missoula; MPC, Bozeman; Rory Schmidt, MRWS, 0.15 cec*	
11:45 AM	**Wrap-up: School Evaluations/Closing Comments by School Director/Adjourn @ 12:00 AM** *0.025 cec*	
12:00 PM	*Lunch*	
1:15 PM *4:30 PM*	**For Certification Exam Preparation Only** **General Water Treatment/Distribution Review** *(Room 275)* *[1A, 2A, 3A, 4A; 1B, 2B, 3B; 2A3B, 3A4B, 4AB, 5AB]* **General Wastewater Treatment Review** *(Room 276)* *[1C, 2C, 3C, 4C]* *NO CEC's - For Certification Exam Preparation Only*	

Certification Exams: Friday, October 1, 1999
Registration @ 8:00 a.m. Examination Period: 8:30 a.m. – 12:30 p.m.

Montana Department of ENVIRONMENTAL QUALITY

Montana Department of
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THE GROUND WATER REMEDIATION PROGRAM

BY CAROLYN DEMARTINO

During the 1996 reorganization of the Montana Department of Environmental Quality (MDEQ) the former Water Quality Division and Ground Water Program were disbanded. Regulation of ground water sites requiring long-term remediation, but not associated with permitting, underground storage tanks, or Comprehensive Environmental Cleanup and Responsibility Act (CECRA-State Superfund) sites, was transferred to the DEQ Remediation Division. Specifically, these sites and any new sites of this nature, now reside in the Hazardous Waste Site Cleanup Bureau, Site Response Section, Ground Water Remediation Program. While the Ground Water Remediation Program, officially named on June 29, 1998 is small, consisting of only one and a half dedicated FTEs (bodies), it has the Herculean task of managing at any one time 100 plus sites with impacted soils and state waters. These long-term remediation sites include tanker truck wrecks and catastrophic petroleum pipeline ruptures to pesticide sites. Regulated pursuant to the Montana Water Quality Act or the Montana Agricultural Chemical Ground Water Protection Act, these sites are in various stages of cleanup from investigation through active remediation to ground water monitoring only.

Where will this extremely important, yet small program be in 5 or 10 years? In order to create a better future for this program, we must look at the current program situation. Currently, only about 50 percent of active Ground Water Remediation Program Sites are being addressed due to budget and staff constraints. Although the 1999 Legislature approved another full-time FTE to work in this program, the U.S. Environmental Protection Agency did not provide adequate funding for the staffing of this much needed position. For the time being, already overloaded Petroleum Release Section staff will continue to manage some of these sites as resources for that section allow.

While the existence of this program in 5 or 10 years appears to be precarious at best, there have been positive accomplishments that will hopefully ensure this program survives. Although new sites continually come into this program, sites are being remediated and closed. Site Summaries have been created for most of the Montana Water Quality Act Sites, providing quick information at the request of the public. The most recent positive accomplishment for this program and its staff is the development of an electronic database for the Ground Water Remediation Program Sites. For the first time ever, information for the "historic" and current ground water sites will be managed and utilized in an efficient manner. Optimistically, looking 5 to 10 years into the new millennium the Ground Water Remediation Program will be thriving. Staffed adequately to provide the citizens of Montana with the level of efficient and cost effective service that they deserve. For more information concerning the Ground Water Remediation Program, please contact Carolyn DeMartino at (406) 444-5343.

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Montana Carbon Offset Coalition to Hold National Carbon Sequestration Conference

The Montana Carbon Offset Coalition will host a national conference, "Exploring Opportunities for Carbon Sequestration," October 26-28, 1999, in Missoula, Montana. The conference will inform and educate people in Montana and the nation on the issues, opportunities and concerns surrounding carbon sequestration. Carbon can be sequestered, or stored, by planting trees or other vegetation. Growing concern over the possibility of climate change caused by carbon dioxide and other greenhouse gases has become a new reason to plant trees.

The Montana Carbon Offset Coalition is a partnership of Montana RC&D's, the Confederated Salish and Kootenai Tribe and Montana Watershed, Inc., a non-profit organization sponsored by conservation districts and designed to implement market-based conservation programs. The Coalition is currently implementing urban forestry and reforestation carbon offset projects. These projects, in addition to sequestering carbon, will improve water quality, improve soil health, decrease soil erosion and enhance the sense of community in our urban areas.

Session topics include:

The Science of the Greenhouse Effect, Forest, Soil and Cropland Carbon Sequestration

Emergence of the Carbon Credit Market: A Win-Win for US Agriculture

An In-Depth Look at Current and Future Policy

Issues and Concerns on Carbon Sequestration: Agency Perspectives, Agricultural Commodity, Environmental Conservation Groups

Innovation and Economics: Tools of Carbon Sequestration Projects

The conference is open to all who wish to attend. National speakers will cover all aspects of national and international policy and the science of forest, soil and cropland carbon sequestration. Model programs will be discussed and panels will highlight the opinions of groups both for and against the Kyoto Protocol and its impacts on US agriculture and the US economy.

For more information on the conference or to request registration materials, please contact Kit Sutherland, Bitter Root RC&D, Inc (406) 363-5450, ext 118. For more information on carbon sequestration and the Montana Carbon Offset Coalition please contact, Ted Dodge, Conservation Partnership Coordinator (406) 587-6965 or Karen Reiter, Assistant Statewide RC&D Coordinator (406) 587-6965.

United States Environmental Protection Agency | Office of Water (4204) Washington, DC 20460 | EPA 832-F-98-001 March 1998

EPA

Cleaning Up Polluted Runoff with the Clean Water State Revolving Fund

What's In It For You?

Based on the serious threats to water sources across the country, EPA would like to see the SRF become a major source of funding to address polluted runoff (nonpoint source) problems. The 51 Clean Water State Revolving Fund (CW-SRF) programs currently issue approximately $3 billion in loans annually. SRF loans are issued at below market rates (0% to less than market), offering borrowers significant savings over the life of the loan.

History

In creating the CW-SRF, Congress ensured that it would be able to fund virtually any type of water quality project, including nonpoint source, wetlands, estuary, and other types of watershed projects, as well as more traditional municipal wastewater treatment systems. The SRF provisions in the Clean Water Act give no more preference to one category or type of project than any other.

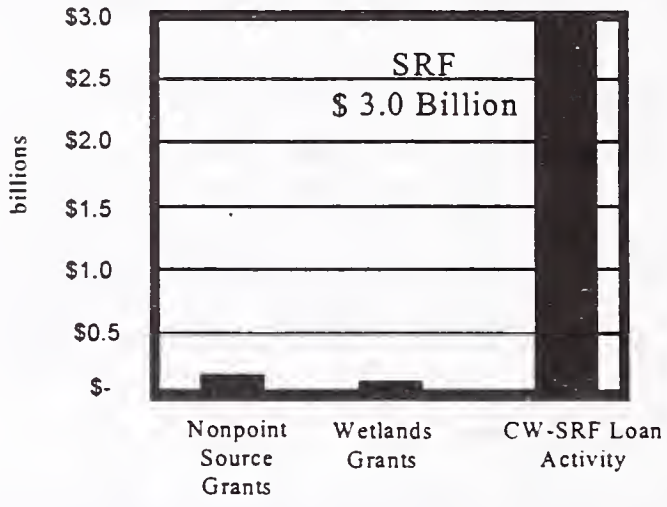
The CW-SRF will invest 10% of its fund on polluted runoff projects by 2001
--Clean Water Action Plan

Capacity of the CW-SRF

The 51 SRF programs work like banks (each state and Puerto Rico has one). Federal and state contributions are used to capitalize or set-up the programs. These assets are used to make low-interest loans for important water quality projects. Repaid funds are then recycled to fund other important water quality projects.

The CW-SRFs have in excess of $24 billion in assets. Currently, the SRFs are funding approximately $3 billion in water quality projects each year. The funding of polluted runoff projects with the SRF is gaining momentum. ***Since 1989 the SRF program has funded 900 projects, investing more than $650 million in polluted runoff projects.***

CW-SRF Buying Power



Loans vs. Grants

Many people believe they would rather have a grant than a loan. Most state and local water quality officials are more familiar with grants and, consequently, many misconceptions persist. **In fact, a loan may be a better deal.** Why?

•**First, No Cash Up-Front.** Most grant programs require significant cost shares (as much as 40% or more). An SRF loan can cover 100% of project costs with no cash up-front.

•**Second, Significant Cost Savings.** SRF loans provide significant cost savings over the life of the loan. The total cost of a 0% SRF loan will be approximately 50% less than the same project financed by a commercial loan at 7.5%. Additionally, a 0% SRF loan is equivalent to receiving a 50% grant (where the matching 50% is financed at market rate).

•**Third, Streamlined Federal Requirements.** Financing a project with an SRF loan means fewer federal requirements than with a federal grant. Plus, the 51 CW-SRF programs are experienced in helping applicants through the loan application process and providing a variety of technical assistance. Also, it may be possible to combine an SRF loan with grant dollars from other sources. Check with your state.

Who May Qualify

Included in a long list of eligible loan recipients are communities, individuals, citizens groups, and nonprofit organizations. Since the program is managed largely by the states, project eligibility may vary according to the priorities within each state. Contact your state's SRF program for details.

Polluted Runoff and the SRF

Polluted runoff occurs when rainfall, snowmelt, or irrigation runs over land or through the ground, picks up pollutants, and deposits them into surface or ground water. For instance, polluted runoff from agricultural sources is the leading contributor to water quality impairments in rivers, degrading over 60% of impaired river miles.

The CW-SRF can fund virtually any type or category of polluted runoff that is included in a state approved NPS management plan.

Here are a few examples of possible projects:

- ➜ Implementation of agricultural BMPs to prevent and reduce runoff
  - conservation tillage equipment
  - soil erosion controls
- ➜ Animal waste facilities
  - manure storage facilities
  - dead chicken composters
- ➜ Rehabilitation of streambanks, riparian corridors and buffers
- ➜ Stormwater management facilities including sediment basins and constructed wetlands
- ➜ Septic system improvements and replacement

Sources of Repayment

Many users of the CW-SRF have demonstrated a high level of creativity in developing sources of repayments. The source of repayment need not come from the project itself. Some possible sources include:

- Property owner's or business's ability to pay (determined during loan application)
- Dedicated portion of local, county, or state taxes or fees
- Recreational fees (fishing license, park entrance fees)
- Stormwater management fees, wastewater user charges
- Donations or dues made to nonprofit groups

Challenges Ahead

We need to make better use of the CW-SRF for important water quality projects. Greater understanding of the tremendous buying power and advantages of SRF loans should dramatically boost their use.

The water quality community needs to work together to increase understanding of polluted runoff issues and facilitate the use of the powerful resources of the SRF to address these significant problems.

How to Get More From the CW-SRF

- *Share information on polluted runoff priorities with SRF managers*
- *Work to enhance SRF programs to include funding of polluted runoff projects*
- *Become involved in the annual SRF planning and priority setting process*
- *Help market the program and encourage loan applications*

EPA has been encouraging the states to open their SRFs to the widest variety of water quality projects and to use their SRFs to fund the highest priority projects in targeted watersheds. Those interested in cleaning up polluted runoff must seek out their SRF programs, gain an understanding of how their state program works, and participate in the annual process that determines which projects are funded.

For more information, contact your Clean Water State Revolving Fund Program (listed on Internet) or contact::

The Clean Water State Revolving Fund Branch
U.S. Environmental Protection Agency
401 M Street, SW (Mailcode 4204)
Washington, D.C. 20460
Phone: (202) 260-7359 Fax: (202) 260-1827
Internet: http://www.epa.gov/OWM/finan.htm

EPA

United States
Environmental Protection
Agency

Office of Water
(4102)
Washington, DC 20460

EPA 800-F-98-001
November 1998

Y2K COMPUTER BUG

Experts say 90% of existing business computer systems will be affected by year 2000 problems. This includes water/wastewater plants and systems in many ways. Is your power supplier ready? Will pumps and motors go down? This article is put out by the EPA and gives a summary of the Y2K problem as well as a six (6) step procedure to follow.

WHAT is the problem? Most people have heard that a major computer problem is on the horizon for January 1, 2000. The issue is called Year 2000, Y2K, or the "Millennium Bug." Many computerized functions require recognition of a specific year, day and time, but most computers and computerized equipment recognize only the last two digits of a year's date.

Therefore, when the calendar changes to the year 2000, many computers and equipment with embedded computer chips will have difficulty interpreting the correct date; they may interpret the year to be 1900 or some other year. A number of things are likely to happen: some computers and equipment will "crash"; others will operate erroneously; others may simply stop and need to be restarted; some may create data that looks correct but in reality contains errors; and some may continue to operate correctly.

WHY is the Environmental Protection Agency (EPA) concerned? As part of its mission to protect public health and the environment, EPA helps assure safe and clean water for all Americans by setting water quality standards for the nation's drinking water and wastewater treatment plants. These plants are owned and operated by local government or private utility companies. Many of these plants operate with some level of computerization. Thus, monitoring, operations and maintenance, communications, laboratory analysis and reporting are areas that should be assessed for potential Year 2000 computer-related problems that could ultimately lead to public health and environmental problems.

It is important that utilities that have not already done so make any necessary changes and develop contingency plans that allow for "business as usual" on January 1, 2000.

WHEN is action needed? Time is running short. Action is required now. Drinking water and wastewater treatment plant owners and operators are, or should be, aggressively acting now to protect their systems from "Millennium Bug" caused failures on January 1, 2000.

HOW should a utility address this problem? EPA recommends a six step approach to help ensure normal operations on January 1, 2000. These steps are:

AWARENESS -- As Soon As Possible

First, owners and operators of drinking water and wastewater treatment plants need to be aware

that the problem is pending. There are numerous articles, newsletters, trade conferences and websites that address this issue. EPA's Y2K Water Sector Website address is ***www.epa.gov/year2000/ow.htm***. It provides basic information as well as links to many other useful websites.

ASSESSMENT -- As Soon As Possible

Owners and operators should locate and list all computerized equipment and equipment with embedded computer chips in their systems and determine which are vulnerable. They can refer to equipment owners manuals and equipment manufacturers, plus a general EPA checklist of potential trouble spots, available at the website noted above.

Owners and operators should also meet with representatives of service and supply chain providers such as power and telecommunications utilities and chemical companies to ascertain their readiness and the degree of risk posed by possible external Y2K failures. In addition, power and telecommunications utilities should provide for restoration of power to drinking water and wastewater utilities at equally high priorities in their emergency contingency plans.

CORRECTION -- by 6/30/99

Correction can involve modification, repair or replacement of systems or components. There are diagnostic programs available as well as consulting firms and computer specialists that can assist in making the necessary corrections. Some of this information is also available on Year 2000 websites.

CONTINGENCY PLANS -- Draft by 6/30/99; Final by 9/30/99

As a back up measure, all systems should have a contingency plan to deal with unforseen problems and emergencies, including possible external service and supply failures. Among other things, these plans should address how systems would be manually operated until the computerization problems are resolved. These plans should be developed simultaneously with the correction phase, and revised after the testing/validation phase.

TESTING/ VALIDATION -- by 7/31/99

Running tests on the system to make sure the corrections fixed the problem is the next step. These tests should be run as soon as possible after assessment and correction in case additional changes need to be made. Independent verification of the test may be appropriate in some cases.

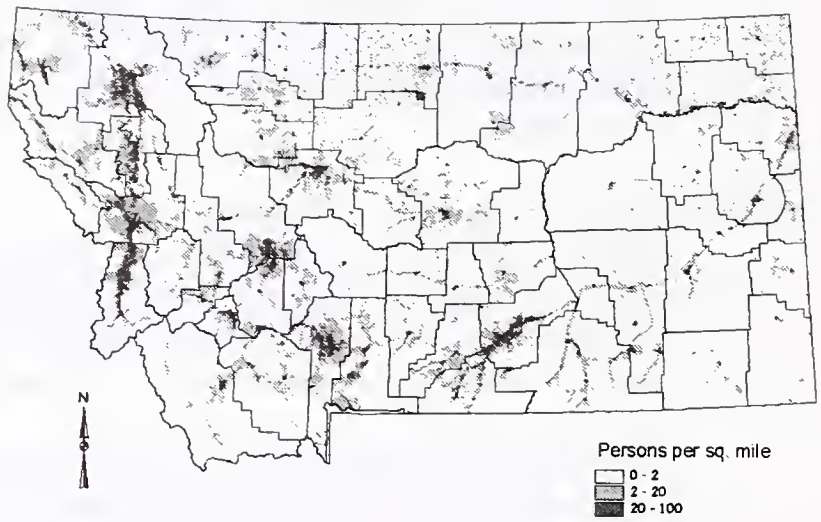
IMPLEMENTATION -- by 9/30/99

Once the systems are readjusted to operate correctly, they should be retested and revalidated. Then they are ready for implementation.

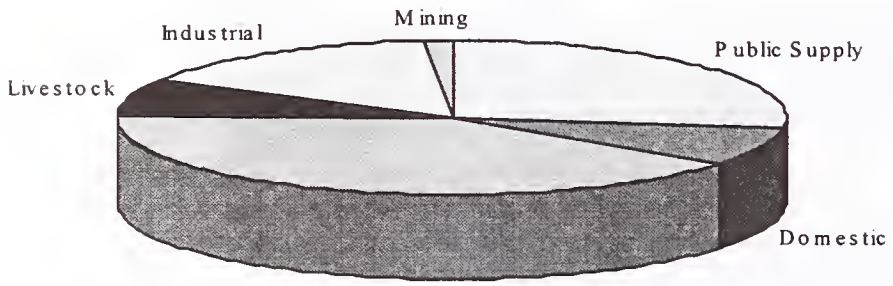
WHERE is help available? In addition to the EPA Year 2000 website ***(www.epa.gov/year 2000/ow.htm***), information and assistance may be available from trade and professional associations, journals and websites. The manufacturers and industry experts can provide advice on specific systems. You can also write to EPA Office of Water (4204), 401 M St., SW, Washington, DC 20460 to request copies of this fact sheet, other written materials and additional information.

MONTANA GROUND WATER CONDITIONS*

Ground Water Importance: Montana, the fourth largest state (147,046 square miles) in the United States, had a population of 879,000 people in 1998 and a population density of around six people per square mile. Montana has seven major urban areas, the largest of which is Billings in Yellowstone County with 126,000 people. Fifty nine percent of Montanans live in these seven urban areas. The remaining population is rural and generally lives in small communities located along the alluvial valleys throughout the state. Approximately 618,800 residents or about sixty-nine-percent of the total population of Montana utilize a public drinking water system for domestic uses (community PWS). An even larger percentage of the population uses water from public systems when considering the use of other types of PWSs

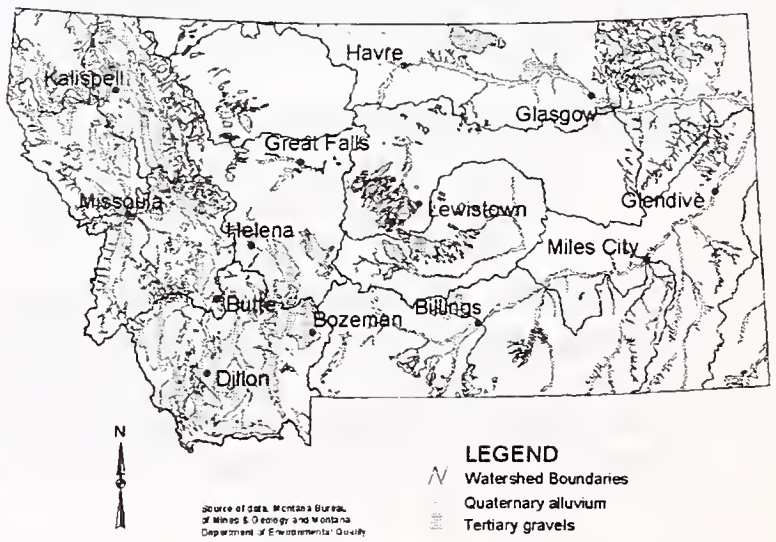


such as restaurants, businesses, schools, and campgrounds. Only around 15 percent of the 645 community public water supplies are associated with incorporated towns or cities and almost half of the community public water systems serve less than 100 inhabitants. More than one half of the people in Montana rely on ground water for household use. The most accessible and highest quality water is from alluvial aquifers and glacial outwash deposits wherever these are found in the state. Alluvial aquifers occupy river valleys and are shallow unconfined or semi-confined sand and gravel deposits. Glacial outwash deposits generally consist of gravel, cobbles, and boulders and are usually unconfined or semi-confined. Both of these types of aquifers are relatively vulnerable to pollution from human activities, with population growth and human developments posing the greatest risk to the alluvial aquifers, especially in the western part of the state. The challenge for Montana is to protect, sustain, and improve ground water quality as more people and businesses move into the river valleys and on top of their source of water.



How Good is the Water? Ground Water in Montana generally remains free of human-caused contamination. The unconsolidated alluvial aquifers and glacial outwash deposits that supply most public and private wells in Montana provide high quality and plentiful drinking water. Concentrations of dissolved solids in water from the western Montana alluvial aquifers commonly are less than 300 milligrams per liter (mg/L) contrasting with water from the eastern alluvial aquifers that usually exceed 1,000 mg/L. The higher quality but vulnerable aquifers of western Montana underlie approximately 16 percent of the state.

Bedrock aquifers in limestone in west-central and southwestern Montana and some of the aquifers in semi-consolidated Tertiary age deposits in northeastern and southwestern Montana are also vulnerable to contamination from human activities. This vulnerability is due to the potential for vertical or horizontal solution channels in the limestone and to surface exposure of the Tertiary deposits. These two aquifers occupy



approximately 11 percent of the state. Bedrock aquifers in the Cretaceous and Paleocene age sandstones under the eastern two-thirds of Montana generally are much less vulnerable to contamination from human activities due to the great depth to water and the widespread presence of low permeability confining layers. These aquifers underlie approximately 70 to 75 percent of the state.

Natural substances may affect water used for domestic or general agricultural purposes, especially in bedrock aquifers. While the national secondary drinking water standard for dissolved solids (TDS) is 500 mg/L, TDS in some eastern bedrock aquifers exceeds 5,000 mg/L. Some water from eastern bedrock aquifers is suitable only as stock water. Water quality in bedrock aquifers tends to be highest near the recharge area.

Costs of Contamination: Contamination generally refers to the alteration of water so that it may not be put to some intended use. Most of the contaminants of concern in Montana are related to human activities but a few, like arsenic, appear to have significant natural sources. Contaminants can enter ground water in different ways including direct injection, underground discharge, and ground surface discharge.

In Montana, there are few documented examples of direct costs associated with contamination of ground water. When contamination does occur, costs are incurred due to initial investigation, site remediation, and sometimes because of the need to replace a drinking water supply. For example, contamination of a well used by the town of Opheim required the development of a new source. Similarly, nitrate contamination at Wilsall required the town to find a replacement source. Leaking petroleum product at Judith Gap required the town construct a new well far outside the developed community. When ground water contamination causes a public water supply to construct a new well, costs can reach as high as $250,000.

The Town of Fairfield is located on a gravel terrace in a malting barley growing region in west central Montana. The shallow gravelly aquifer tapped by the drinking water supply is perched on a shale formation and is very vulnerable to contamination. The aquifer is termed "sensitive". Recharge occurs primarily through irrigation infiltration and irrigation canal leakage.

Sensitive aquifers often may contain several different contaminants resulting from activities on the land surface. The Fairfield public water supply has had detects, at one time or another, of:

- Nitrate
- Picloram
- Assert
- Prometon
- Chlopyralid

The pesticide detects noted above have all been at very low levels, above detection limits but well below any established Maximum Contaminant Levels. The presence of these contaminants illustrates the degree of sensitivity of the aquifer and underscores the need for source water protection planning since there is no other ready source of water for the town.

Efforts to Protect Ground Water: Protection of ground water in Montana is the responsibility of several state agencies. Primary responsibility for protecting ground water **quality** lies with the **Department of Environmental Quality**. Primary responsibility for administering water rights to manage ground water **quantity** is the **Department of Natural Resource and Conservation**. Primary responsibility for ground water **characterization** is the **Montana Bureau of Mines and Geology**. A plan describing the conservation, development, and utilization of Montana's ground water resource was finalized in 1999. Called the Montana Ground Water Plan (MGWP), it provides for agency and citizen coordination to achieve effective protection of Montana's ground water, education of its citizens regarding ground water, and adequate, yet cost-effective, cleanup of ground water contamination. MGWP addresses both ground water quality and quantity. The program has three major components; 1)Protection; 2) Education; and 3) Remediation and will likely form the basis for comprehensive ground water planning in Montana.

What Else is Needed? As a headwaters state Montanan's enjoy relatively clean water. Educating and informing the public about ground water and pollution prevention remains one of the most significant challenges that must be met in order to help maintain our high quality water. The MGWP recognizes that some of the recommendations will require additional resources to implement and unless the additional resources are made available, they will not get done. Moreover, funding mechanisms and levels are set by the Legislature. An informed and educated citizenry will help insure this process moves forward to protect, sustain, and improve a clean and healthful environment.

- The information in this fact sheet is derived from the 1998 Montana 305b Report.

The Stockholm Junior Water Prize

The Stockholm Junior Water Prize is an international environmental award honoring one of the world's most outstanding water science research projects by a young person or group of young people. The Stockholm Junior Water Prize competition engages, encourages and supports the interest of these future leaders in water environment issues.

Founded by the Stockholm Water Foundation to complement the Stockholm Water Prize, the Stockholm Junior Water Prize was first awarded in Sweden in 1995 and internationally in 1997.

Since its inception as an international contest in 1997, the Prize has experienced significant growth each year. Participants in 1999 will include the winners from national contests in Australia, Argentina, Finland, France, Germany, Great Britain, India, Latvia, The Netherlands, Norway, Poland, South Africa, Spain, Sweden, Thailand and the United States.

The International Final will be held in Stockholm during the Stockholm Water Festival and the Stockholm Water Symposium. The finalists will be invited to Stockholm for a five-day stay. During this time they will exhibit their projects at the Stockholm Water Symposium, present their projects to the international nominating committee, and participate in lectures, study tours and social events. On August 10, the Stockholm Junior Water Prize Award Ceremony will take place.

U.S. finalist Brett DePoister (third from left) poses with WEF judges (from left): Robert McMillon, Ronald Sieger, Paul Roach, Neal Armstrong, and Mary Evans during the Intel ISEF competition.

"Water is life and future life belongs to the coming generations. The Stockholm Junior Water Prize is about life in the future. The solutions for tomorrow will moreover originate from innovations. These will evolve from fantasy and genuine devotion to water and its complexity. In order to succeed it has to be fun to work with water. Young water professionals can contribute with the passion and creativity needed to achieve a fresh water future for coming generations."

Johan Rockström
Chair of the
international nominating
committee

The Prize

National finalists from Canada, Mexico and the United States will receive a $300 cash award, a plaque and round-trip airfare (with an accompanying adult) to Stockholm, Sweden. Accommodations will be provided for four nights during the Stockholm Water Festival, where students will compete in the International Final. The Stockholm Junior Water Prize laureate will receive $5,000 and a handsome water sculpture. One honorable mention will be selected and receive a $1,000 award.

The Judges

Finalists from Canada, Mexico and the United States are judged by water experts from the Water Environment Federation during the Intel International Science and Engineering Fair in May. The International Final is judged by the international nominating committee, consisting of representatives from the Water Environment Federation and ITT Industries (USA), WaterAid (Great Britain), the Helsinki Commission (Finland) and the Universities of Stockholm, Uppsala and Kalmar (Sweden).

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Why water?

Around the globe, little attention is paid to the world's growing water crisis. In our classrooms, newsrooms, living rooms and board rooms, few are lending thought to the future of this life-sustaining resource. Currently poor sanitation, limited access and finite supply of water plague both developed and developing countries.

The next generation's task is daunting: to learn from the mistakes of previous generations and safeguard our water while helping to ensure that all of the planet's citizens have access to clean, abundant water resources.

Here, the Stockholm Junior Water Prize can help by engaging, encouraging and supporting the interest of youth in water environment issues. The Prize taps into the unlimited potential and boundless enthusiasm of young people. It binds their intellectual and creative sides to foster innovative solutions to current and future water questions. And it builds leaders – the future water ambassadors for and guardians of water.

STOCKHOLM JUNIOR WATER PRIZE

Poor Sanitation

- *According to the World Health Organization, proper sanitation is available to only 34% of the poputation in Africa, 63% in Latin America and the Caribbean, 29% in Asia and the Pacific and 34% on average worldwide.*
- *95% of the world's cities are dumping raw sewage into their waters.*
- *More than five million people die each year from causes related to unsanitary water.*

Limited Access

- *One billion people must make a three-hour journey on foot each day just to obtain their drinking water.*
- *Nearly 1/5 of the world's population doesn't have access to safe drinking water.*

Finite Supply

- *Water use is growing at twice the rate of the world's population.*
- *Although 70% of the Earth's surface is covered by water, less than 2% is fresh water fit for human use.*

For more information about the Friends of the Stockholm Junior Water Prize *in the United States, please call the Water Environment Federation's Lorraine Loken at 703-684-2487.*

Water Environment Federation®
Preserving & Enhancing the Global Water Environment

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THE REAL PURPOSE OF SOURCE WATER PROTECTION PLANNING

Source water protection planning is an activity that most Public Water System (PWS) operators and their customers would agree is a good thing. It just seems to make sense. Source water protection can be summed up pretty simply; it is a process of looking for and managing potential contaminant sources before a problem shows up in your monitoring results.

The concept makes sense, but many PWSs feel they can't really afford the commitment needed to complete the source water protection planning process. It's not that plan development costs a lot in terms of cash outlay, but rather, it requires the dedication of time doing "paperwork" kinds of things. And non-mandatory paperwork often get shoved onto the back burner because there's just more real stuff to do, like fixing broken lines, making new service connections, doing maintenance on the pumps, repairing valves, reading meters, and on, and on, and on.

Source water protection relies heavily on the multiple barrier concept, an approach that considers all of your activities to be important to insuring a safe water supply. In other words, you are already doing many things to protect the quality of the water you produce. Source water protection planning can help you focus some of those efforts to where they'll do the most good and will definitely help focus your activities should you have a significant contamination event

The following story outlines how a relatively small, rural PWS in the central U.S. neglected some important aspects of protecting their water supply. You will see that the problem may have been related the source itself, inadequate treatment, and/or distribution system maintenance, and that each of these possibilities needed to be investigated to establish the probable cause. Investigations into disease outbreaks affecting an entire community are time consuming and costly. The cost to this community was four deaths, numerous hospitalizations and widespread illness. You should also be able to see that this story about what befell a small community in Missouri isn't a far cry from what could happen to any community in Montana.

This story is presented to help you consider source water protection in a different way. Perhaps it should be considered as a necessary part of what the PWS should do to provide a safe water supply and to protect public health. When these serious problems hit the fan all at once, the time needed to identify potential contaminant sources is a luxury the sickened or dying community members can't afford.

The small farming community of Cabool, Missouri (pop 2,090) suffered a disease outbreak caused by a pathogenic E. coli in late 1989. The outbreak caused widespread gastroenteritis for a period of 5 weeks. Initially, the illnesses were thought to be caused by a food borne pathogen, something in the milk or food supply. A thorough investigation by the Center for Disease Control (CDC) ruled out food borne transmission and moved the focus to the community water system. When it was shown that folks living within the city limits were 20 times more likely to develop bloody diarrhea than their non-city neighbors were, a boil order was issued. The result was striking. The occurrence of new cases dropped to near zero almost immediately.

The investigation of the public water supply included monitoring data review, water sample collection, a complete sanitary survey, and a modeling effort designed to model water flow within the distribution system. The investigation into each of these areas is more fully described in the following paragraphs. It is a short story about a community that was frozen with fear for a period of weeks until the cause was finally identified.

The review of several years worth of bacterial (bacti) monitoring results revealed no significant historic coliform problems in the system. Investigators realized that the bacti monitoring data was of very limited value since Cabool was only required to submit 2 bacti samples per month. Those samples represented only a very small portion of the very large volume of water typically used by the community.

The source water used by Cabool was untreated ground water withdrawn from four wells finished at depths between 1,000 and 1,300 feet. The wells tapped an aquifer capped by a limestone formation with sinkholes evident

Source Water Protection Planning (continued)

at the surface; conditions that are often considered suspect due to high contamination potential. However, the sampling history of the wells themselves was good, as was the sampling history of the water source for a nearby dairy with a similar construction. It appeared that the 400 feet of grouted casing was an effective barrier to down borehole contamination. With the integrity of the well established, attention turned to the distribution system.

The PWS had two large storage tanks and a distribution system that was the typical patchwork of cast iron, galvanized iron and PVC piping. Water loss from faulty meters and leaks in the distribution system consumed about 35% of the produced water. Leakage out of the distribution system could also allow cross contamination under certain conditions. The typical disinfection procedure following line repairs was to open the nearest upstream fire hydrant and flush for 15 minutes. Disinfection following repairs was not part of the PWS routine.

The investigation of the disease immediately following the outbreak collected seemingly random pieces of information as is typical with these investigations. The procedure is similar to the development of source water protection plans. As investigators hoped, the information revealed several significant events that preceded the outbreak, but were not recognized as related when they occurred. For example, record cold temperature and heavy snowfall caused blockage in 43 service meters and two major distribution line breaks. Replacement of the problem meters resulted in submerged meter boxes in several instances. Several hours elapsed between the two major line breaks and repairs.

Contamination by surface water in a distribution system without a disinfectant residual is always a concern. At Cabool, the age and location of the sewage collection system also became a point of interest, since back-siphon conditions may have occurred in the distribution system that was already shown to have a fair amount daily water loss. The old sewage collection lines also allowed infiltration of ground water during certain periods that resulted in overflow at some manholes. The investigators decided to try to model flow in the PWS distribution system to see if there was a correlation between the meter repairs or main breaks and the illnesses.

An effort was also made to try to isolate disease-causing organisms from the distribution system. This was a long shot since a month had passed since the main breaks, but samples were collected at the extreme ends of the system where water use was low and water tended to stagnate. Lab analysis confirmed coliforms remained within the distribution system and suggested that a modeling effort aimed at water flow in the distribution system might be useful.

Modeling water flow in the distribution system took into account seasonal water use information and system layout. The model indicated that the wells were not a likely source of the contamination based on the distribution of illnesses relative to the wells. The meter replacement sites were also considered based on distribution system flow patterns and illnesses; again, no correlation was evident. Finally, conditions during the main breaks were modeled and showed a very close correlation between expected flow in the system and illnesses. The model used by the investigators indicated that 85% of the illnesses occurred within the area served by the section of the distribution system impacted by the two main breaks under flow conditions. It appears that subsurface contamination from leaking sewer lines entered the PWS distribution system during two the main breaks and resulted in the disease outbreak.

Natural conditions, incomplete procedures, and inadequate maintenance all contributed to the outbreak at Cabool. A comprehensive identification and assessment of potential contaminant sources coupled with implementation of specific potential contaminant source management activities to ensure the integrity of the water system may have prevented the incident had they been in place when conditions conspired to wreak havoc on the small, rural farming community.

Cities Cut Water System Energy Costs/SCADA

Water distribution can be the largest single component of energy use by local governments. Using Supervisory Control and Data Acquisition (SCADA) systems, many cities are slashing these energy costs. Across the United States, energy consumption accounts for 50% to 75% of the cost of operating municipal water systems. Of this, pumping the water often consumes 80% or more of the electricity used in water distribution and treatment and therefore represents a prime opportunity for local government to save energy and dollars.

A growing number of cities are trimming the energy appetites of their water departments by using SCADA systems. A basic SCADA system consists of a central computer that communicates with water system control points such as pumps, reservoirs, and metering stations. At these control points, remote terminal units gather and manage data. Acquisition of data from the remote terminal units and water system control is the job of the central computer. Water distribution systems may have hundreds of such control points, presenting a complex challenge in energy optimization.

Fresno, California, is one city using a SCADA system to save energy and money. Fresno currently pays about $5 million per year in water distribution power bills, about $725,000 less than it would be paying without the SCADA system. Completed in 1988 at a cost of $3.2 million, Fresno's system is based on a VAX computer system that communicates by radio with the 200 wells that supply the city's water. The SCADA system in Fresno achieves the largest portion of its energy savings—estimated at $600,000 annually—by selecting which wells will supply water. About $300,000 of this savings is based on selecting the most cost-effective wells. The SCADA system's central computer continuously monitors the cost effectiveness of each well by tracking the pumping energy required for each gallon the well produces. As the demand for water changes over time, the SCADA system makes sure that pumps at the most cost-effective wells are turned on first and turned off last.

The other $300,000 that the Fresno system saves is through well selection according to optimal time-of-day electrical rates—those rates that vary according to the time of day. The SCADA system communicates with microchip-based "intelligent" terminals at each well. Each terminal has been programmed to know, without having to consult the central computer, what its time-of-day rate schedule is and how to respond. Fresno's SCADA system has provided yet another bonus in the form of $125,000 saved annually through better control of water line pressure. Previously, the system's many pumps wasted energy by creating much higher water line pressure than necessary. Now, with the SCADA system continuously monitoring and managing the pumps, Fresno saves $100,000 directly from the reduction of energy consumed by pumps. The remaining $25,000 of savings represents the cost of water—a scarce resource in the West—that was being lost to leakage before the SCADA system brought water line pressure under control.

Energy Conservation—Just One of the Benefits

SCADA systems provide better information, control, and customer service—important benefits to water system engineers and managers. For these reasons, cities will often install a SCADA system when the old control system needs to be replaced. Cities also choose SCADA systems to unify separately controlled systems.

In addition, SCADA systems provide big savings in areas other than energy. For example, the City of Gresham, Oregon, has projected that its new $185,000 SCADA system, due for completion in 1993, will save $200,000 of the yearly $980,000 bill for water bought from the City of Portland. The SCADA system will allow the City of Gresham to collect detailed information to better control its water purchasing.

Some city water managers say that SCADA's ability to computer-optimize operations has cut costs in numerous other ways as well. When monitoring pumps, for example, SCADA systems can warn of mechanical problems early and avoid costly breakdowns. SCADA systems can reduce the use and cost of water-quality-related chemicals and even the number of employees needed to manage the system. Another noteworthy benefit is that SCADA systems can help discover and locate system leaks.

What SCADA Systems Can Do for Water Utility Managers

Water systems managers may want a SCADA system for reasons other than energy-efficiency-related dollar savings. However, the managers may have to highlight energy savings as the best justification for buying a SCADA system. Energy savings from Fresno's SCADA system, for example, paid for the system within the first 5 years. "The city justified it [the SCADA system] purely on the basis of energy management," says Douglas Kirk, Fresno's water production supervisor. "Because most cities need a clear justification to spend money, I would put energy management first because that's where you save money."

More important for water system managers, however, a SCADA system's energy optimization software allows existing personnel to respond faster and more intelligently. Without SCADA, for example, an operator who is responsible for keeping a reservoir from getting low but lacks reservoir status information may run a pump more than necessary just to avoid problems. Or an operator may turn on a pump an hour earlier than required simply because he or she is walking by and wants to save time.

"The value of a SCADA system lies not just in its computer power, but also in the fact that a water system can be remotely controlled from central locations," says Douglas Kirk. SCADA systems eliminate the need for staff to roam the field, manually operating control points and recording data. The systems automatically generate a host of reports and graphics that would otherwise require staff to study records, punch calculators, and produce reports manually.

One of a SCADA system's most appealing and potent cost-saving techniques is to obtain the best deal on time-of-use charges, as does the Fresno system. For example, in 1987, the California Water Service Company installed a SCADA system to manage time-of-use costs in its Westlake District. During the first 4 years of system operation, the cost per pumped gallon averaged 29% lower than that during the 4 years before installation. The SCADA system cost just more than $100,000, and annual savings have averaged $47,000.

Conclusion

Water distribution is typically one of the largest single consumers of electrical energy among city operations. SCADA systems, using the power of the computer to optimize energy management decisions, are an ideal solution to the complex problem of water system energy management. The sophistication and power of SCADA technology are rapidly increasing. So is the level of expertise in design, installation, and applications of SCADA systems. At the same time, the costs of SCADA system hardware are dropping. As a result, SCADA systems are becoming one of municipal government's most potent weapons in its running battle against rising energy costs.

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Alternative Wastewater Treatment: Advanced Integrated Pond Systems

Advanced in concept and simple in design, a new wastewater treatment technology may offer a solution for communities beset by intensifying cost constraints and water quality regulations. Why not build a sewage treatment facility that uses much less energy than a conventional one and produces no odors, especially if construction, operation, and maintenance costs are also dramatically lower? This question may occur to many who have visited the Wastewater Treatment and Relocation Plant in St. Helena, California, particularly to visitors from communities feeling pressure from federal and state environmental regulations.

Based on the concept of Advanced Integrated Pond (AIP) systems, the St. Helena plant marks a radical departure from conventional wastewater treatment thinking. In conventional plants, for example, aeration often consumes 60% or more of the electrical energy used in wastewater treatment. In contrast, microalgae in an AIP system provide dissolved oxygen through photosynthesis, substantially reducing electrical consumption. Not surprisingly, these systems are optimal for sunbelt communities.

"At St. Helena, we've proven this technology with a remarkable quality of treatment," says George Milanes, chief operator at the plant. "The economics of what it takes to put one of these together just makes good financial sense. This should really be the technology of choice for smaller communities of 2000 to 10,000 people."

"AIP technology is not limited to small communities, however. Cost comparisons with other treatment methods tend to favor AIP systems in many larger communities as well," says Sandy Walker, Director of Special Projects for SOA, Inc., a commercial design engineering firm in Martinez, California, that specializes in AIP systems.

Construction and Maintenance Costs

Good financial sense begins with facility costs. Because solar aerated ponds are built of formed earth rather than of reinforced concrete, they cost about 100 times less to build per cubic foot of containment than do conventional treatment plant reactors. The total pond area needed is much larger than that needed for a conventional plant, but ponds should still cost only one-third to one-half as much to build, according to William Oswald, who designed St. Helena's system in the early 1960s. Oswald is a professor emeritus at the University of California, Berkeley (UC-Berkeley) and inventor of the AIP system.

Proponents of the technology believe that maintenance costs for the new plants are also lower because such plants minimize the use of mechanical equipment and require a smaller inventory of spare parts and supplies. Operation costs are reduced because the plants can be run with smaller staffs. Another important advantage of AIP plants is the small amount of sludge they produce. In these ponds, sludge ferments until nothing is left but a small volume of residue. For example, during 27 years of operation, St. Helena's wastewater treatment plant has never had to remove residue. A recent measurement at St. Helena showed that in nearly 3 decades, less than 1 meter (3.28 feet) of residue had accumulated at the bottom of the deep digester pit. This represents a substantial benefit in terms of meeting environmental regulations for residue disposal.

Energy Costs

A properly designed AIP plant should consume about one-quarter to one-fifth the energy of a conventional mechanical wastewater treatment plant. This translates directly into cost savings. One significant source of savings lies in using solar energy rather than electrical energy for aeration. Conventional plants aerate by using electrical energy to blow or mix air bubbles into the wastewater. In an AIP system, algae use solar energy and photosynthesis to supersaturate the wastewater with the oxygen that microbes need to break down waste.

"For people who have always thought in terms of conventional treatment, it's hard to understand that you can aerate without any mechanical system," says Oswald. "Using mechanical aeration, you need about 1 kilowatt-hour of electricity for each kilogram of dissolved oxygen. In an AIP system in a good climate, you get around 20 kilograms (44 pounds) of oxygen per kilowatt-hour, because your energy is essentially free. That energy is solar energy."

St. Helena's plant still uses more energy than an optimal, up-to-date AIP plant would require. That's because St. Helena's plant, designed 30 years ago, uses conventional pumps to circulate water in the pond where aeration takes place. Calculations that now show the five-to-one energy advantage of an AIP plant are based on designs using paddle wheels for circulation. Paddle wheels are now a proven technology commonly used in commercial algae-growing operations. Paddle wheel circulation has been incorporated in an AIP system that UC-Berkeley is designing for a St. Helena-sized wastewater treatment plant in California's Central Valley. St. Helena is also considering a conversion to paddle wheels.

While aeration by algae and solar energy can greatly reduce the electricity consumed by an AIP plant, another source of energy electricity—generation through combustion of methane—could eliminate electrical power costs completely. Methane can be produced by fermenting algae harvested from the plant's settling pond. Conventional plants typically install large tanks known as digesters, in which sludge and effluent solids ferment to produce methane. In an AIP plant, methane from natural fermentation in the digester pit could be captured at the surface of the facultative pond. Developing a good commercial methane capture system for AIP systems is under way. The Environmental Engineering and Health Science Laboratory (UC-Berkeley) in Richmond, California, is working on that development with funds from the California Energy Commission and the California Institute for Energy Efficiency.

Wastewater: A Resource, Not a Waste

As a result of state and federal regulation, wastewater treatment managers are seeing tougher regulations affecting the quality and handling of sludge and effluent from their plants. AIP systems not only produce less sludge; they can also produce cleaner effluent for every dollar spent on treatment. "Our system breaks down toxic substances," says Bailey Green, a UC-Berkeley scientist who manages the AIP pilot plant at the Richmond laboratory. "By input-output analysis, we know that halogenated organic compounds are biodegraded in large part." Regulators may put stricter limits on parasites that cannot escape the fermentation pit of an AIP system. In addition, most of the heavy metals in sewage are precipitated and remain trapped in the facultative pond's digester pit. Further, nutrients such as nitrogen and phosphorus can damage aquatic ecosystems into which effluent may be discharged. AIP plants are better than conventional plants at removing these nutrients. Nitrogen removal occurs in the digestion phase in the facultative pond. In addition, nitrogen and phosphorus are taken up and contained by algae in the high-rate pond. Oswald champions the use of algae harvested from AIP plants as

fertilizer because the nutrients contained in algae would be released more slowly than would the water-soluble forms in chemical fertilizers and thus be less likely to return to lakes and streams in runoff.

AIP systems also exceed conventional primary and secondary treatment plants at killing pathogens because of natural disinfection by high alkalinity and ultraviolet (UV) exposure. Without any other treatment, effluent from a four-pond AIP plant should be sufficient to meet the most recent World Health Organization recommendations for irrigation water, according to Oswald. The St. Helena plant is highlighting the beneficial reuse of its reclaimed water by growing pumpkins, corn, melons, flowers, roses, and more than 0.8 hectares (2 acres) of wine grapes.

The St. Helena plant has demonstrated the AIP concept for nearly 30 years. More than 85 hybrid AIP plants are now employing elements of the AIP concept in the United States and other countries. Most of them, like St. Helena's plant, produce very little sludge. Many of them use a combination of mechanical and solar aeration, a practice that still requires less electricity than does conventional treatment and less land area than does a system such as St. Helena's. As the benefits for AIP systems become more well known, however, the acceptance of this low-cost treatment concept is likely to grow. In a political climate of intensifying regulation and a fiscal climate in which construction, maintenance, and operation costs are increasingly important, the AIP concept may prove to be the ideal technology for use by many local wastewater managers.

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Montana Department of
ENVIRONMENTAL QUALITY

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SWAP NEWS

Montana Source Water Assessment Program Update

by Montana Department of Environmental Quality (DEQ)

Note: Beginning with the current issue, SWAP News will feature lead articles that highlight different aspects of the Montana Source Water Protection Program. The focus this month is source water assessment of surface water sources. Proposed topics of future articles include susceptibility assessment, the pass-through grant program, and public reporting. Contact us if you would like to read more about other topics. Also, contact us if you want to be removed from our mailing list.

SOURCE WATER ASSESSMENT FOR SURFACE WATER SOURCES

Issues and Technical Considerations

Streams and reservoirs are highly vulnerable to contamination by chemicals from catastrophic spills and microbes that cause bacterial or viral disease outbreaks. Also, usually a much larger area than ground water sources contributes water to streams and reservoirs. For these reasons the objectives of source water assessment and the methods used differ considerably between surface water and ground water sources.

EPA requires states' to delineate source water protection areas for streams and reservoirs that include entire watersheds to the state border. However, a differential approach that identifies smaller areas for concentrated assessment and protection efforts is allowed. Montana DEQ has proposed this approach in its Source Water Protection Program. Only those sources so close that contamination may reach a water supply before an intake can be closed are considered for source water protection. General land uses, large industrial facilities, and sources of direct discharges will be identified to the watershed extent, however, local management is not proposed for these sources.

DEQ is currently conducting a source water assessment for the City of Havre to demonstrate delineation and assessment methods for surface water sources. Thus far, a Spill Response Region designated for concentrated assessment has been delineated and a preliminary assessment has been completed. Havre's Spill Response Region includes land and water within a one-half mile buffer along the Milk River and its tributaries for a minimum distance of 10 miles upstream from Havre's intake. All sources of contaminants with primary drinking water standards and cryptosporidium have been identified in the Spill Response Region. However, only the potential for spills or leaks of large quantities of chemicals or contamination by microbes and nitrate are assessed in detail.

The greatest threat to Havre's source water is a chemical spill at a highway, railway, or pipeline crossing. The only effective way to control this threat is to develop and implement a detailed emergency plan. Spills of water treatment chemicals at the water plant or diesel at a train refueling station, and contamination from animal wastes at the Hill County Fairgrounds and the Northern Montana Agricultural Experiment Station are other serious threats. Organic chemicals and nitrate are considered to be contaminants of greatest concern.

Land uses and natural conditions in the Milk River Watershed upstream from Havre also impact water quality. Chemical salts accumulated at saline seeps, chemicals and sediments from farmland, and animal wastes from animal feeding operations are flushed into the Milk River by runoff. A strong case can be made that non-point sources such as these affect the quality of water at Havre more than spills in the Spill Response Region. However, there is little that a source water protection program initiated at the community level can do to control these contaminant sources. Instead a state or regional program such as the Total Maximum Daily Load Program is needed. Under this program DEQ considers impacts on drinking water supplies when evaluating proposals for stream or watershed restoration.

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